

# ANNUAL REPORT



Research Institute Leiden Observatory  
Onderzoeksinstituut Sterrewacht Leiden

# 2024



# ANNUAL REPORT 2022



Universiteit  
Leiden  
The Netherlands

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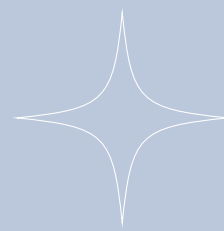


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# FOREWORD



# Dear Reader



Let me first use this space to thank my predecessor Huub Röttgering, who led the Observatory since 2012 and completed ten years at the helm in August of this year. It has been a period of significant growth, leaving behind a vibrant institute at the forefront of contemporary astronomy.

The final stages of the global Covid-19 pandemic were still significantly felt this year – after two years of on-and-off restrictions, and most of us contracting the virus at some point. This has impacted both staff members and students enormously. The long periods of social isolation, the loss of family members, and the continuing burden of long-Covid symptoms, are continuing to affect many of us. A special thanks to Wouter Schrier, our student advisor, who has worked so hard to assist students who are experiencing problems. Luckily, our teaching went back to normal, offering our full curriculum including more than 150 master and bachelor research projects. Many of our master students managed to enter a PhD program at the Observatory or elsewhere. This year, also six assistant professors obtained permanent positions to contribute to our astronomy courses and further strengthen our research. Welcome!

Our research excelled as never before, in many exciting areas of astronomy with a total of 590 refereed publications. Some of the highlights are discussed later in this report. In particular, the first results from the James Webb Space Telescope are stunning, with Leiden Observatory astronomers being one of the first to work with its data through Early-Release Science programs. We are very proud of the many prestigious prizes and grants Sterrewachters received this year. Pavel E. Mancera Piña was awarded the Van Swinderen Prize 2022 by the 'Koninklijk natuurkundig Genootschap' for his PhD thesis Dark matter and angular momentum in nearby disc galaxies. The simulation project EAGLE, with Joop Schaye as Principle Investigator, has won the Group Achievement Award of the Royal Astronomical Society. The largest galaxy simulation contains as many as 6.8 billion particles and took months to calculate on the world's largest supercomputers. It was announced that the Gaia Collaboration, with Anthony Brown leading the data processing team, will receive the 2023 Lancelot M. Berkeley – New York

Community Trust Prize for Meritorious Work in Astronomy. Ewine van Dishoeck won the prestigious 2022 Fritz Zwicky Prize for Astrophysics and Cosmology, and the Niels Bohr International Gold Medal – the latter awarded by Queen Margrethe of Denmark at a ceremony in Copenhagen. Henk Hoekstra was awarded an ERC Advanced Grant for dark matter research using ESA's EUCLID satellite. Yours truly has won the NWO Spinoza Prize this year, thanking everybody at our wonderful institute who made this possible.

We will miss dearly former Observatory members that passed away. The sad news reached us that Carolina Ödman passed away on November 15 at the age of 48. While at the Observatory from 2005 to 2009, she built up the Universe Awareness program, reaching hundreds of thousands of young children in more than 60 countries world-wide. Former Leiden graduate, Maarten Schmidt passed away on September 17 at the age of 92. He world-famously showed that quasars are extremely distant and luminous objects, bringing him on the front cover of Time magazine in 1966.

Finally, this year our beloved institution has found itself in the midst of a very difficult affair concerning social safety, with wide-spread media coverage. It will come as no surprise that improving social safety is at the heart of Observatory management. We will come through this together, stronger and better!



Ignas  
Snellen

*Director*

# LEIDEN OBSERVATORY



At Leiden Observatory front line astronomy research is carried out in a stimulating, international environment where people from diverse backgrounds and countries feel welcome and can work to the best of their abilities. Its mission is threefold: (A) to carry out world-class astronomy research, maintain a strong PhD program, help shape future large international observational facilities and develop key technologies for ground-breaking astronomical discoveries; (B) to provide excellent education at the bachelor and master level, not only to prepare students for PhD projects, but also for society at large; (C) to inform the general public of exciting results and the beauty of the Universe. It places particular emphasis on studies of the characterization, formation and evolution of galaxies and the structures in which they are embedded, and exoplanets and their host stars.



## The Observatory and its people

Leiden Observatory, Sterrewacht Leiden, the astronomical institute of the Faculty of Science of Leiden University, was established in 1633, making it the oldest operating university observatory in the world. While originally located at the main Faculty Building (now known as the Academy Building) of the university, a purpose-built observatory was constructed in the university's botanical gardens in 1860. Since the mid-1970s the institute has been located within the campus of the Faculty of Science. A long list of eminent astronomers has worked at the Sterrewacht, including Profs. Willem de Sitter, Ejnar Hertzsprung, Jan Oort, Adriaan Blaauw, and Henk van de Hulst. Currently, Leiden Observatory is proud to be one of the top astronomical research institutes in Europe. It has about 35 full time scientific staff members, 50 postdoctoral researchers, 100 PhD students, 130 Masters students and 265 Bachelor students. Among its professors are four Dutch Spinoza Prize winners: van Dishoeck, Franx, Tielens, and Snellen.



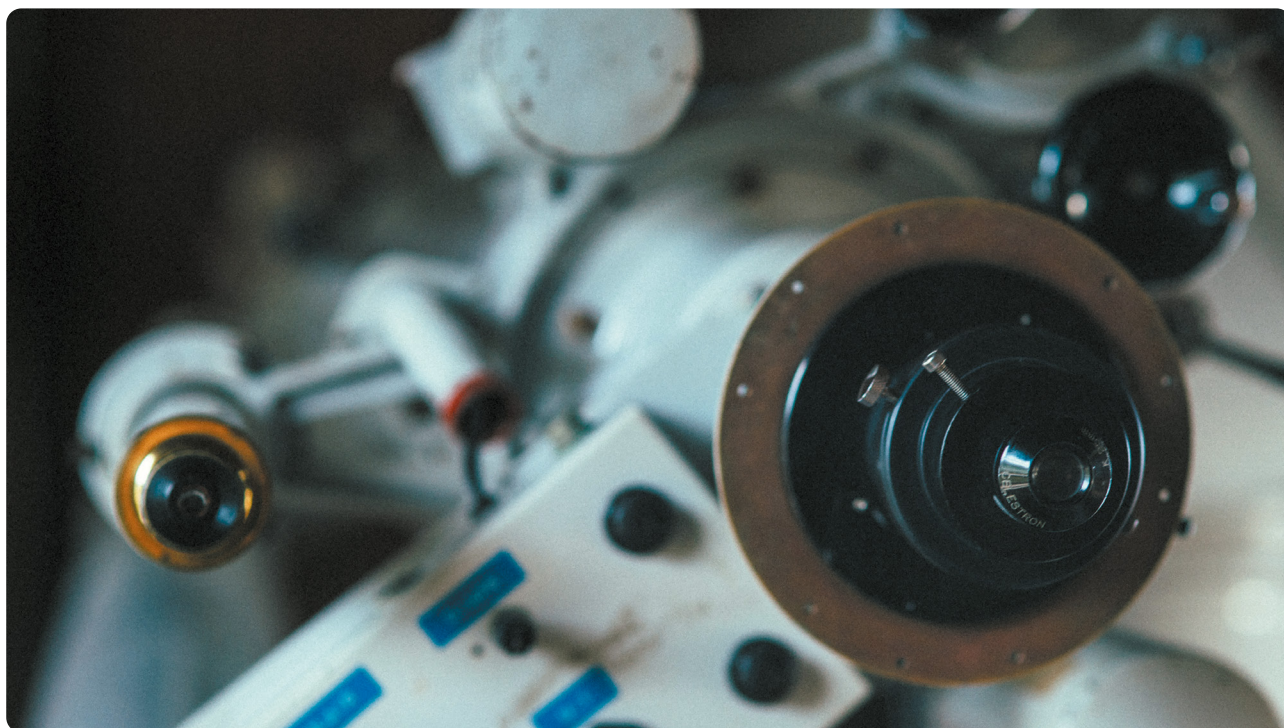
# Research and Technology

The research methods used range from numerical simulations on huge parallel computer systems, to observations with large ground and space-based observatories. Leiden Observatory has its own optical and astrochemical laboratories and has built its own dedicated large-scale multi-processing computing facilities. It also has access to world-class ground – and space-based observatories around the world. An important resource is the observational facilities that are provided by the European Southern Observatory (ESO). The Leiden Observatory is also home to the METIS project office. The main objective of its instrumentation program is to develop novel optical techniques and state-of-the-art instrumentation for the detection and characterization of exoplanets.

The Observatory works closely together with the Physics, Chemistry, Mathematics, and Computer Science Institutes within the Faculty of Science, with a focus on cosmology, astrochemistry, advanced statistics, big data, large-scale computing, and machine learning. Nationally, the Observatory is well connected to the science networks of the National Research School NOVA.

Leiden Observatory is also focused on driving the development of key technologies that will enable future astronomical discoveries. Close collaborations with Dutch partners are crucial, such as the NOVA optical group at ASTRON, TNO Space, the Netherlands Institute for Space Research (SRON), and Airbus (Leiden). Ultimately, most instruments are built in international consortia under the umbrella of ESO or the European Space Agency (ESA). In this way, Leiden astronomers play important roles in the development and operation of the ESA's GAIA and EUCLID missions. Leiden professor Bernhard Brandl is the NOVA principal investigator of METIS, one of the first light instruments of the future Extremely Large Telescope (ELT). Leiden professor Henk Hoekstra has multiple roles in the EUCLID mission. He is the lead of the weak lensing group and one of the four cosmology coordinators.

Last year the NWO institute SRON moved to the premises of the Leiden University Science Campus. This has provided an opportunity to strengthen the links between the Observatory and SRON and thus ESA's space projects, and has led to joint appointments.





## Bachelor and Master education

Leiden Observatory is part of the Faculty of Science and hosts both the Bachelor and Master studies in astronomy of Leiden University. By the end of the year, the three year BSc track in Astronomy is followed by about 260 Bachelor students, and provides a broad basis in astronomy, with important components in physics, mathematics, and informatics. In the same period the two year MSc program in Astronomy is followed by about 129 Masters students. Since the latter is fully taught in English it is also very popular among non-Dutch students. The master not only prepares students for a scientific career path, but also launches careers in business or industry.

## Public Engagement

The outreach effort at Leiden is extensive, and involves members of the Institute at all levels, from undergraduates to senior professors and everyone in between. The dedicated Astronomy & Society Group which is led by Pedro Russo reaches over 800.000 people every year, and organized a wide range of local and international activities, including a wide range of educational programs and a citizen science lab. Also, the regular collaborations with artists are noteworthy, drawing upon a long historical tradition of mutual inspiration.

The institute operates a centre in the historic Observatory (Oude Sterrewacht) building in the centre of Leiden. In cooperation with the astronomy student club L.A.D. F. Kaiser the institute organises regular tours to get an inside look at (and when the weather allows a view through) one of the historic telescopes.



# CALENDAR OF EVENTS

# 2022

## JANUARY

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Shared Sky: Canvases of the Universe", art-science exhibition, Old Observatory [Nov 2021 – May 2022]

2022 Group Achievement Award of the Royal Astronomical Society for the international EAGLE project led by Joop Schaye. EAGLE (Evolution and Assembly of Galaxies and their Environments) is a large collection of numerical simulations about the formation of galaxies [14]

Astronomy on Tap Leiden: the Milky Way and nearby galaxies (Ashley Bemis and Ian Roberts), via ZOOM [31]

## FEBRUARY

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PhD recruitment days [10, 11]

Astronomy on Tap Leiden: The Sun and the evolution of stars (Laura Hayes and Rob Kavanagh), Grand Café de Burcht [28]

## MARCH

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2022 Fritz Zwicky Prize for Astrophysics & Cosmology awarded to Ewine van Dishoeck [11]

Astronomy on Tap Leiden: From Ancient Celts to Modern Astronomy (Riccardo Nanni and Jos de Bruijne), Grand Café de Burcht [28]

## APRIL

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Henk Hoekstra awarded ERC Advanced Grant for dark matter research [26]

Astronomy on Tap Leiden: Star and Planet Formation (Nienke van der Marel and Martijn van Gelder), Grand Café de Burcht [25]

## MAY

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First ever photo of Sagittarius A\*, a super-massive object at the centre of the Milky Way, revealed by Huib Jan van Langevelde on behalf of the global Event Horizon Telescope (EHT) consortium at a press conference at the headquarters of the European Southern Observatory (ESO) [12]

Public lecture by Event Horizon Telescope (EHT) director Huib Jan van Langevelde on the first photo of black hole at the heart of our Galaxy, Academy Building [14]

Astronomy on Tap Leiden: Simulating the Universe (Anna de Graaf and Matthieu Schaller), Grand Café de Burcht [30]

## JUNE

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The Dutch Research Council NWO announced that Ignas Snellen is one of the winners of the Spinoza Prize 2022 [17]

Observatory BBQ, Leiden Observatory yard [17]

Astronomy on Tap Leiden: Finding Other Worlds (Gaël Chauvin and Kate Follette), Grand Café de Burcht [27]



# 2022: A DYNAMICAL YEAR



# The Oort Lecture

The Oort Lecture is an annual event, in memory of the famous Dutch astronomer, organized by the Jan Hendrik Oort Foundation and Leiden Observatory. The lecture covers an astronomical subject of current interest and is intended for a general audience with an interest in astronomy. This year's lecture was presented by Prof. James (Jim) Moran and took place in the Academy Building in Leiden on 14 September 2022.

Jim Moran is one of the world experts in the use of Very Long Baseline Interferometry (VLBI) to study cosmic masers and supermassive black holes in the centers of galaxies. He is a member of the Event Horizon Telescope consortium, which was awarded the Breakthrough Prize in Theoretical Physics in 2019 for the imaging of the black hole shadow in the galaxy Messier 87. He was also a member of the team recognized with the Rumford Prize of the American Academy of Arts and Sciences for the development of VLBI more than 50 years ago. He received his BS and PhD degrees from the University of Notre Dame and the Massachusetts Institute of Technology in 1963 and 1968 respectively, both in electrical engineering. He has spent most of his career at the Center for Astrophysics where he is the Donald H. Menzel Professor of Astrophysics, Emeritus, at Harvard University, and a senior scientist at the Smithsonian Astrophysical Observatory.

He served as the Director of the Submillimeter Array in Hawaii during its construction phase, as Associate Director of the CfA, and as chair of the Astronomy department at Harvard. He is an author of the widely used textbook "Interferometry and Synthesis in Radio Astronomy." He was awarded the Newton Lacy Pierce Prize of the American Astronomical Society. He is a member of the US National Academy of Sciences and the American Philosophical Society, founded by Benjamin Franklin.

Playing a role in the first ever VLBI experiments in 1967, Prof. Moran is still an active VLBI innovator. He is a co-author of the most authoritative book on radio interferometry and specialises in VLBI observations of mega-masers in orbit around black holes. He is an active member of the Event Horizon Telescope Collaboration, gaining world-wide recognition for imaging the shadows on M87\* and SgrA\*.

Jim Moran was first appointed Oort professor for 2020, but his visit was postponed in 2020 and 2021 because of Covid. In 2022 the university has appointed him again as Oort professor.

His lecture was titled "Supermassive Black Holes and Where to Find Them". Supermassive black holes – or SMBHs in short – are objects as massive as a million to a billion suns. Much of what we know about these Brobdingnagian beasts comes from tracking for example stars, masers and ionized gas clouds that swirl around them before finally being ingested. In his lecture, professor Jim Moran, took the public into the world of Supermassive black holes and discussed how world-wide arrays of radio telescopes operating in precise synchronism can be used to exquisitely track the cosmic debris surrounding SMBHs and help understand their nature.



# The Equity, Diversity, and Inclusion (EDI) Committee

The Equity, Diversity, and Inclusion (EDI) Committee at Leiden Observatory is dedicated to fostering an inclusive and equitable environment within the institution. 2022 was a difficult year for the EDI committee as many members moved onto new positions or took extended leave during the year. Despite this difficulty, the committee undertook several important initiatives and activities to promote diversity, and to ensure equal opportunities for all members of the observatory community.



## Mentorship and Support

Recognizing the importance of mentorship and support, the EDI Committee established a mentorship program within the observatory. This program paired early-career researchers with experienced postdocs and faculty members, fostering professional development and providing guidance for underrepresented groups. Additionally, the committee created a support network that offered resources and assistance to individuals facing challenges related to EDI aspects.

## Climate Survey

To gain insight into the experiences and perceptions of individuals within the observatory, the EDI Committee conducted a climate survey. This survey aimed to identify any potential barriers or challenges faced by different groups and collect suggestions for improvement. The survey results provided valuable data that have helped shape the committee's future activities and initiatives.

## Outreach and Collaboration

The EDI Committee actively engaged with the broader scientific community through outreach and collaboration. We helped organize events and workshops in partnership with the national EDI body (NAEIC) to promote diversity and inclusion. These collaborative efforts aimed to encourage participation from diverse backgrounds and expand the representation of underrepresented groups in scientific research and academia.

## Awareness and Education

The EDI Committee organized a series of workshops, journal clubs, and seminars aimed at raising awareness about various aspects of equity, diversity, and inclusion. These events were open to all members of the observatory and covered topics such as unconscious bias, gender equality, what it means to be an EDI ally, mental health, LGBTQ+ inclusion, and cultural sensitivity. These educational sessions provided a platform for meaningful discussions and helped in building a shared understanding of the importance of EDI principles at the institute.

## Policy and Institutional Change

The committee actively worked towards policy and institutional changes that promote equity and inclusivity. We collaborated with the observatory's leadership and administration to review and revise existing policies and procedures, ensuring they align with EDI principles (such as the hiring of new PhD students). The committee also provided recommendations for improving recruitment and retention practices to enhance diversity among faculty, staff, and students.

In 2022, the Equity, Diversity, and Inclusion Committee at Leiden Observatory made significant strides in fostering an inclusive and equitable environment. We have recently had new volunteers join our body, so we expect an even more active 2023.

Finally, in my capacity as the new EDI chair, I want to thank the previous chair Sanjana Panchagnula for her tireless EDI initiatives at the institute. We are all indebted to her, and we wish her luck in her future adventures.

# Leiden Wellbeing Committee: Monitoring Mental Health at the Observatory

Over the past years, the Wellbeing Committee at the Observatory has actively addressed mental health concerns associated with academic pressures, communication challenges, peer pressure and related topics such as impostor syndrome. To monitor staff and student wellbeing, we conduct periodic anonymous surveys and utilize the information gathered to tailor our support. Additionally, in the past, we have established a Buddy system to foster connections and provide guidance, which is particularly useful to newcomers. We have also organised workshops, such as the Impostor Syndrome Workshop, and ensure access to information and resources through our local website and observatory-wide information dissemination. Our commitment is to create a supportive environment, prioritizing mental health to keep the well-being of all Observatory members.



## JWST produces a blizzard in July

In 2022, it felt like Christmas in July. Or perhaps more accurately, like that moment on 'Pakjesavond' when you finally break through the final layer of a multi-layer surprise, and reveal the present you've been working so hard to unwrap!

My email pinged with a notification that the first data from the JWST Early Release Science program that I'm leading, Ice Age, had just been logged into STScI's MAST archive. Our program is intended to probe the chemical evolution of ices, from where they form on dust grains in cold molecular clouds to where they are incorporated into comets within protoplanetary disks. We were using a range of instruments, including NIRSpec fixed slit and IFU, NIRCам WFSS, and MIRI LRS and MRS, to target lines of sight to background stars behind the cloud as well as a protostar and edge-on protoplanetary disk. These data were publicly available right away, giving the community a chance to get acquainted with these observing modes and data for these type of objects before the Cycle 2 deadline in January 2023.

As I opened the file for a NIRSpec fixed slit observation of cloud ices, I caught my breath: the data quality was amazing! Despite the target being only 1 mJy in the continuum, every major ice feature that we had expected to see was there, each with a profile that was incredibly smooth, except for in a few places. Additionally, there were a bunch of smaller ice features that had only previously been detected towards bright protostars, like OCS and OCN<sup>-</sup>. At our team telecon later that day, other team members, including Harold Linnartz (co-PI, laboratory team lead) and Ewine van Dishoeck, pointed out additional features, including <sup>13</sup>CO<sub>2</sub> and <sup>13</sup>CO, also first detections for cold clouds. And the "noisy" part of the spectrum was actually not random noise, but a tight pattern of CO photospheric absorption lines from the background star itself!

Despite the summer vacation, we scrambled to identify the various ice features and divide up the analysis work amongst the team members. Will Rocha and Marina Rachid took charge of fitting a global fit and local

fits to several ice species, respectively, for comparison to obtain relative abundances, while I and several other team members hammered out the draft. Our modeling team, including Thanja Lamberts and Serena Viti, began working on a long term chemical evolution paper to explain the pattern of ices that we detect, while Ardjan Sturm started a series of three papers analyzing the 2D distribution of ices seen in the protoplanetary disk. Team members in Hawaii (Adwin Boogert, co-PI and NIRCcam team lead), Arizona, and the UK started processing our NIRCcam WFSS data, only to discover that STScI's pipeline did not work. Fortunately we'd been working on our own pipeline for two years, so they ended up skipping

the official pipeline and going straight to our own. In the mean time, the "bonus" NIRCcam images that we took to make a catalog for the WFSS extraction produced beautiful images of our target region. When our spectroscopy paper was published in Nature Astronomy in early 2023, NASA used these images to make a press release to accompany our spectra of the coldest ices to ever with JWST.

It's been quite the year, but, like all good Sinterklaas surprises, the wait made JWST's first data that much more special.

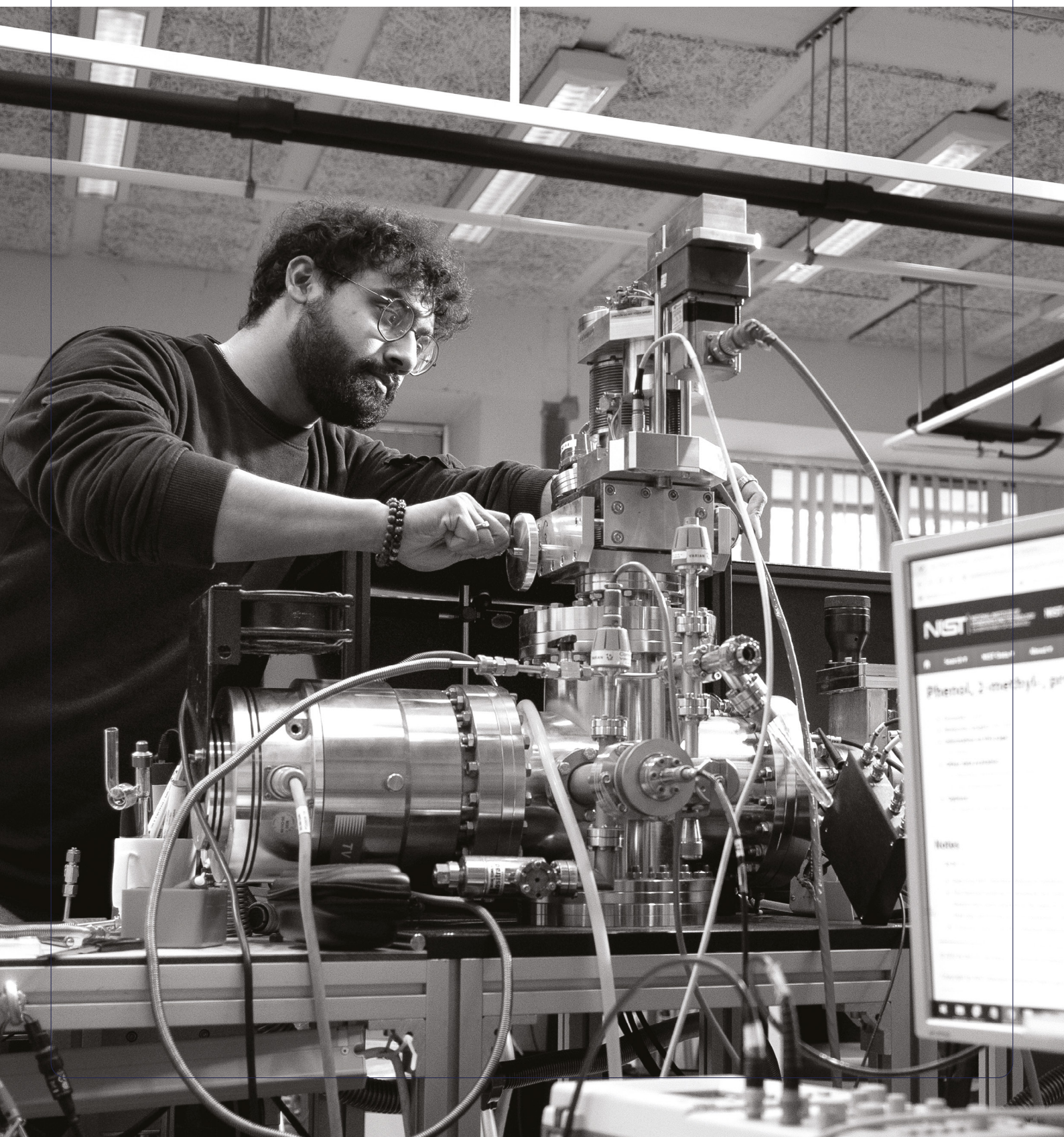


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NASA, ESA, CSA, and M. Zamani (ESA).



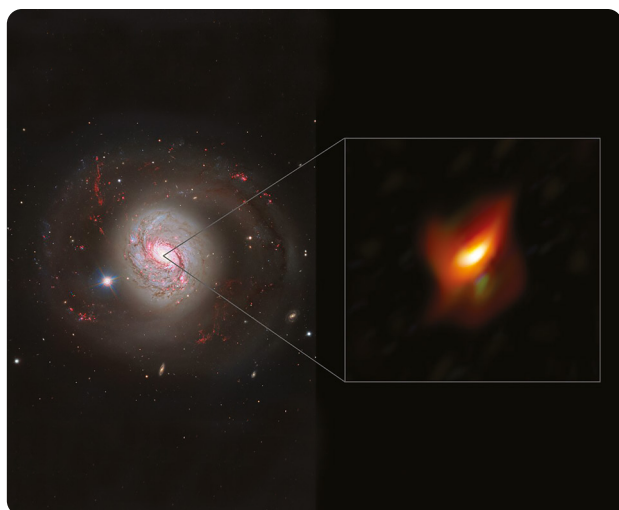
# RESEARCH HIGHLIGHTS



## Supermassive black hole caught hiding in a ring of cosmic dust

By making extraordinarily detailed observations with the ESO VLT of the centre of the galaxy Messier 77, also known as NGC 1068, lead author Gámez Rosas, Walter Jaffe and their international team detected a thick ring of cosmic dust and gas hiding a supermassive black hole. This discovery provides vital evidence to support a 30-year-old theory known as the Unified Model of AGNs. The observations were made possible thanks to the Multi AperTure mid-Infrared SpectroScopic Experiment (MATISSE), which was developed by a European consortium including the Netherlands (NOVA, Leiden). The results have been published in Nature on February 16.

The left panel of this image shows a dazzling view of the active galaxy Messier 77 captured with the FOcal Reducer and low dispersion Spectrograph 2 (FORIS2) instrument on ESO's Very Large Telescope. The right panel shows a blow-up view of the very inner region of this galaxy, its active galactic nucleus, as seen with the MATISSE instrument on ESO's Very Large Telescope Interferometer.

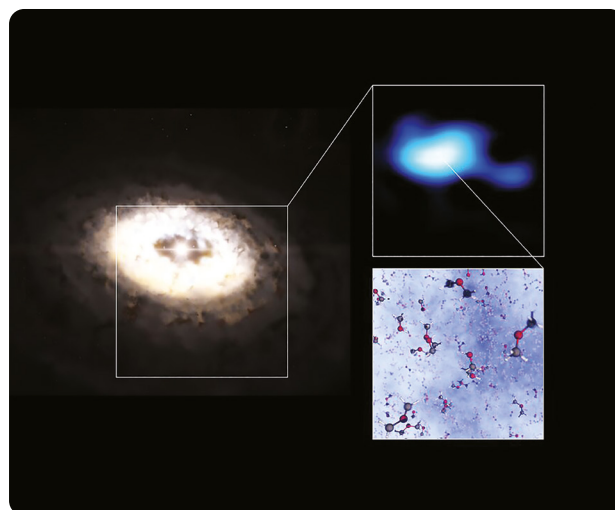


ESO/Jaffe, Gámez-Rosas et al.

## Astronomers discover largest molecule yet in a planet-forming disc

Using the Atacama Large Millimeter/submillimeter Array (ALMA) in Chile, Nashanty Brunken, Alice Booth, Margot Leemker, Pooneh Nazari, Nienke van der Marel, and Ewine F. van Dishoeck have for the first time detected dimethyl ether in a planet-forming disc. With nine atoms, this is the largest molecule identified in such a disc to date. It is also a precursor of larger organic molecules that can lead to the emergence of life. This publication was released on March 8, International Women's Day 2022.

This composite image features an artistic impression of the planet-forming disc around the IRS 48 star, also known as Oph-IRS 48. The disc contains a cashew-nut-shaped region in its southern part, which traps millimetre-sized dust grains that can come together and grow into kilometre-sized objects like comets, asteroids and potentially even planets. Recent observations with the Atacama Large Millimeter/submillimeter Array (ALMA) spotted several complex organic molecules in this region, including dimethyl ether, the largest molecule found in a planet-forming disc to date. The emission signaling the presence of this molecule (real observations shown in blue) is clearly stronger in the disc's dust trap. A model of the molecule is also shown in this composite.



ESO/L. Calçada, ALMA (ESO/NAOJ/NRAO)/A. Pohl, van der Marel et al., Brunken et al.

# First photo of black hole at the heart of our Galaxy

On May 12 the first photo of the shadow of Sagittarius A\*, a super-massive object at the centre of the Milky Way was revealed in a worldwide press conference. This picture could only be taken thanks to the Event Horizon Telescope (EHT) cooperation of radio telescopes worldwide in a VLBI network. Huib Jan van Langevelde is the director of this global collaboration, and presented the results at a press conference at the headquarters of the European Southern Observatory (ESO). 'I've been looking at Sagittarius A\* since my PhD research in Leiden and it's always been difficult because of everything that's between us and the centre of the Milky Way,' says Van Langevelde. 'But today we're publishing the best picture ever!'

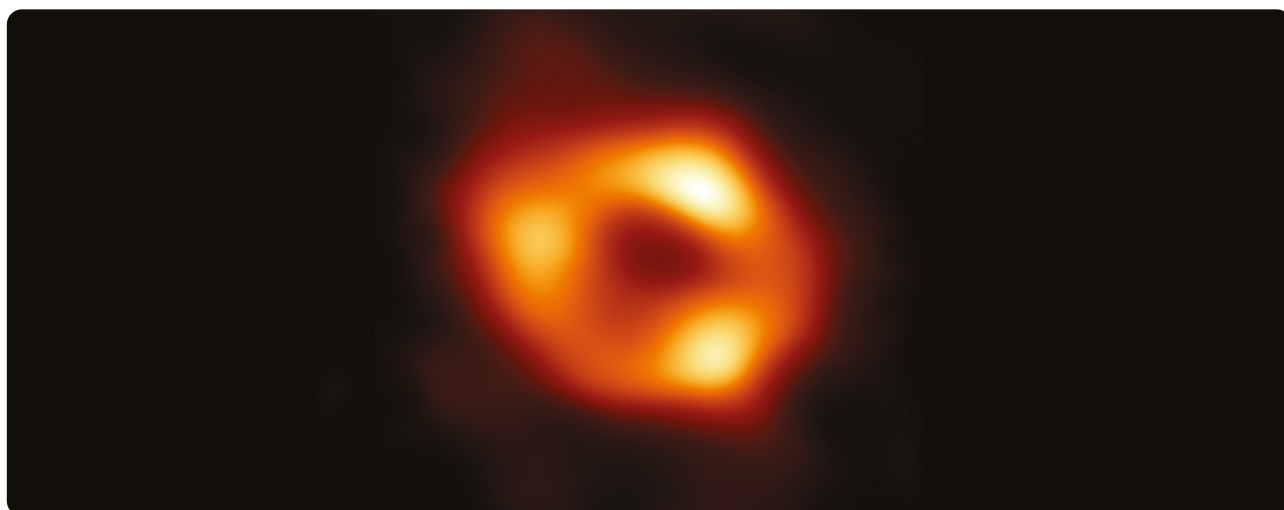
The team has made use of observations from a global network of radio telescopes. In the Netherlands, astronomers and technicians from the University of Amsterdam, Radboud University, Leiden University (Violette Impellizzeri, Huib Jan van Langevelde), the University of Groningen, JIVE and ASTRON are part of the EHT collaboration. The results are being published in a special issue of *The Astrophysical Journal Letters*.

This is the first image of Sgr A\*, the supermassive black hole at the centre of our galaxy, with an added black

background to fit wider screens. It's the first direct visual evidence of the presence of this black hole. It was captured by the Event Horizon Telescope (EHT), an array which linked together eight existing radio observatories across the planet to form a single "Earth-sized" virtual telescope. The telescope is named after the event horizon, the boundary of the black hole beyond which no light can escape.

Although we cannot see the event horizon itself, because it cannot emit light, glowing gas orbiting around the black hole reveals a telltale signature: a dark central region (called a shadow) surrounded by a bright ring-like structure. The new view captures light bent by the powerful gravity of the black hole, which is four million times more massive than our Sun. The image of the Sgr A\* black hole is an average of the different images the EHT Collaboration has extracted from its 2017 observations.

In addition to other facilities, the EHT network of radio observatories that made this image possible includes the Atacama Large Millimeter/submillimeter Array (ALMA) and the Atacama Pathfinder EXperiment (APEX) in the Atacama Desert in Chile, co-owned and co-operated by ESO is a partner on behalf of its member states in Europe.



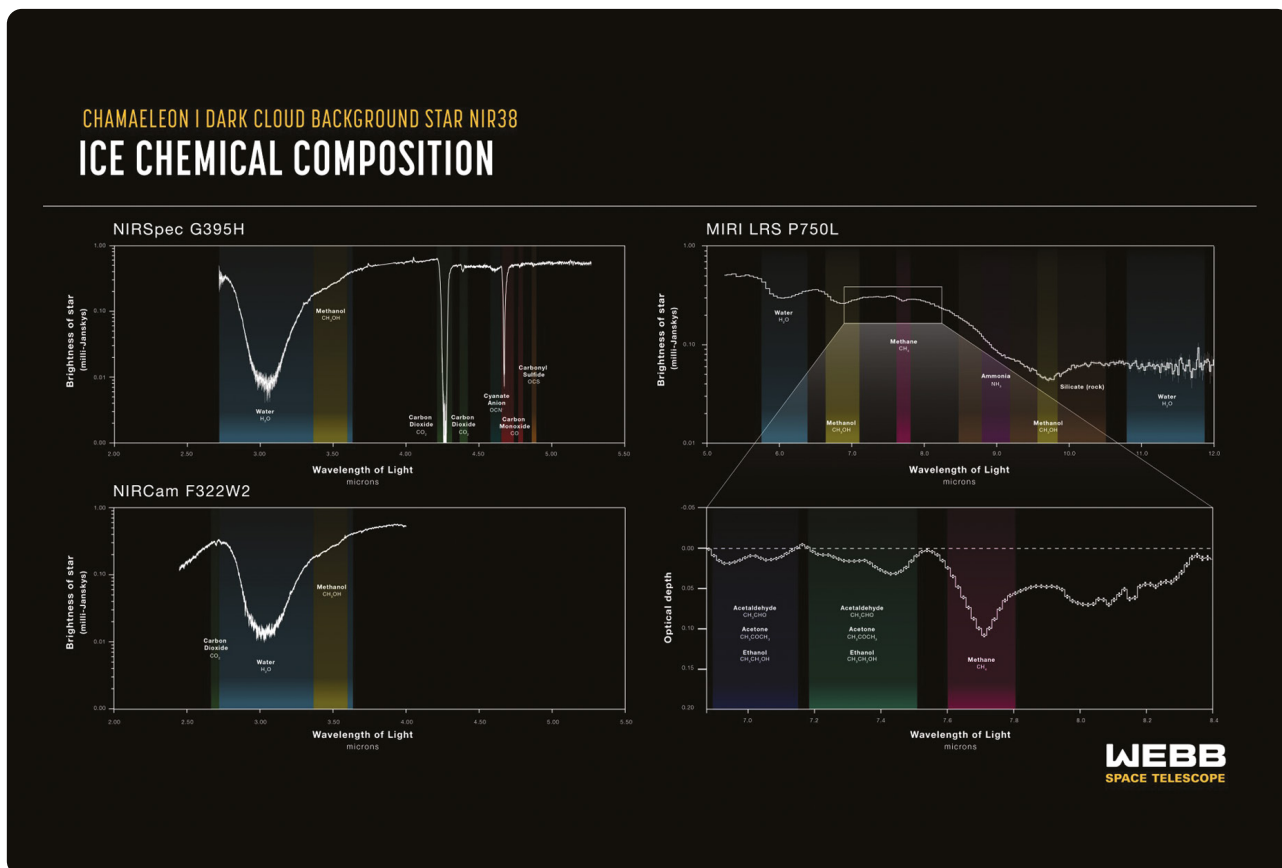
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EHT Collaboration

# Webb Unveils Dark Side of Pre-stellar Ice Chemistry

On January 24 NASA and ESA announced that JWST had successfully reached its final orbit around the second Sun-Earth Lagrange point, or L2. After the commissioning phase, Melissa McClure was one of the first Leiden astronomers who received data from the Early Release Science program in July. She is leading the Ice Age team, which consists of 50 experts in astrochemistry, laboratory astrophysics, star formation and the interstellar medium from 10 countries. The program probes the chemical evolution of ices, from where they form on dust grains in cold molecular clouds to where they are incorporated into comets within protoplanetary disks. First results will be produced in Nature Astronomy in 2023.

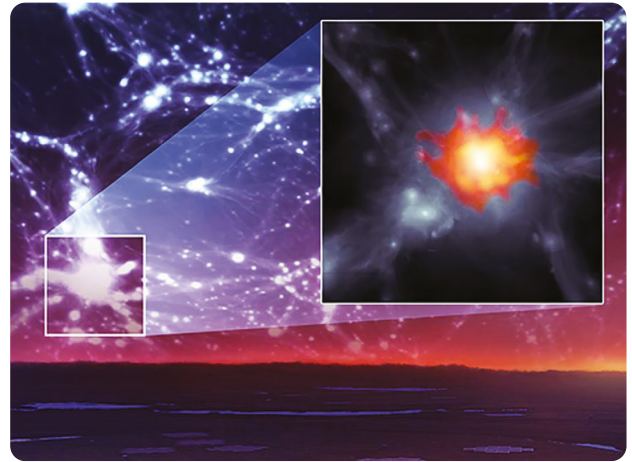
Astronomers have taken an inventory of the most deeply embedded ices in a cold molecular cloud to date. They used light from a background star, named NIR38, to illuminate the dark cloud called Chamaeleon I. Ices within the cloud absorbed certain wavelengths of infrared light, leaving spectral fingerprints called absorption lines. These lines indicate which substances are present within the molecular cloud. These graphs show spectral data from three of the James Webb Space Telescope's instruments. In addition to simple ices like water, the science team was able to identify frozen forms of a wide range of molecules, from carbon dioxide, ammonia, and methane, to the simplest complex organic molecule, methanol.



NASA, ESA, CSA, and J. Olmsted (STScI).

# Gigantic radio sources discovered in the Universe

An international team of researchers, which included Reinout van Weeren and Huub Röttgering, discovered four radio sources of gigantic size. These so-called Megahalos are up to ten million light years in size and could now be detected for the first time with the help of the radio telescope LOFAR. This discovery was published in the journal Nature in September.



Artistic representation of the large-scale structure of the universe above the LOFAR telescope. The inset shows a magnification into a galaxy cluster where a Megahalo is observed with LOFAR. (Copyright: ASTRON/Cuciti/Vazza/Gheller).

# Webb reveals chemical profile of atmosphere of exoplanet WASP-39 b

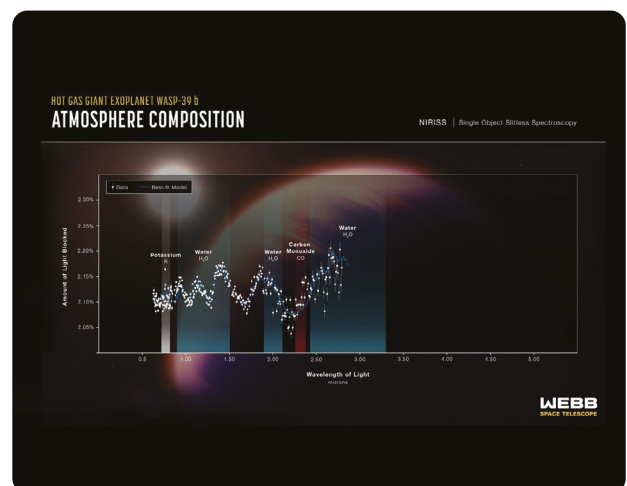
An international team of astronomers revealed the first 'chemical profile' of an the atmosphere of 'hot Saturn' WASP-39 b, an exoplanet about the same mass as Saturn. The team, including Leiden astronomer Yamila Miguel and PhD student Amy Louca, made the profile using so-called Early Release Science data from the James Webb Space Telescope. The results were announced in November and have been submitted for publication in five papers.

The atmospheric composition of the hot gas giant exoplanet WASP-39 b has been revealed by the NASA/ESA/CSA James Webb Space Telescope.

A transmission spectrum is made by comparing starlight filtered through a planet's atmosphere as it moves in front of the star, to the unfiltered starlight detected when the planet is beside the star. Each of the data points (white circles) on these graphs represents the amount of a specific wavelength of light that is blocked by the planet and absorbed by its atmosphere. Wavelengths that are preferentially absorbed by the atmosphere appear as peaks in the transmission spectrum.

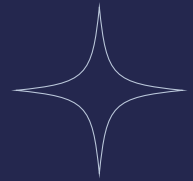
The blue line is a best-fit model that takes into account the data, the known properties of WASP-39 b and its star (e.g., size, mass, temperature), and assumed characteristics of the atmosphere. Researchers can vary the parameters in the model – changing unknown characteristics like cloud height in the atmosphere and abundances of various gases – to get a better fit and further understand what the atmosphere is really like.

This graph displays data from Webb's NIRISS instrument, showing fingerprints of potassium (K), water (H<sub>2</sub>O), and carbon monoxide (CO).



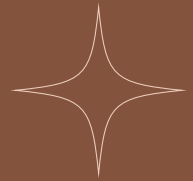
NASA, ESA, CSA, J. Olmsted (STScI).

# PHD DEFENCES



NAME	DATE	SUPERVISORS	THESIS TITLE
<b>Omar Contigiani</b>	26/01/2022	Prof.dr. K.H. Kuijken	<i>Exploring the edge</i>
<b>Nastasha Wijers</b>	16/03/2022	Prof.dr. J. Schaye / Prof.dr. J. Kaastra	<i>X-raying Extragalactic Gas: warm-hot gas in the EAGLE simulations</i>
<b>Andrew Barr</b>	12/04/2022	Prof.dr. A. Tielens	<i>The Infrared Spectrum of Massive Protostars: Circumstellar Disks and High Mass Star Formation</i>
<b>Gwenaëlle Dufour</b>	21/06/2022	Prof.dr. H.V.J. Linnartz	<i>Non-linear Astrochemical Kinetic: Theory and Applications</i>
<b>Xiaoyuan Zhang</b>	29/06/2022	Prof.dr. J. Kaastra	<i>From intracluster medium dynamics to particle acceleration</i>
<b>Anna de Graaff</b>	15/09/2022	Prof.dr. M. Franx	<i>Shaping Massive Galaxies</i>
<b>Stijn Debackere</b>	22/09/2022	Prof.dr. J. Schaye / Prof.dr. H. Hoekstra	<i>Aggravating matters: Accounting for baryons in cosmological analyses</i>
<b>Stella Reino</b>	27/09/2022	Dr. E.M. Rossi / Prof.dr. Koen Kuijken	<i>Galactic substructures as tracers of dark matter and stellar evolution</i>
<b>Dilovan Serindag</b>	06/10/2022	Prof.dr. I.A.G. Snellen / Dr. M.A. Kenworthy	<i>Exploring Strange New Worlds with High-Dispersion Spectroscopy</i>
<b>Amanda Mesquita</b>	25/10/2022	Dr. A. Vidotto / Prof.dr. I.A.G. Snellen	<i>Exploring the interactions of M dwarf winds and cosmic rays</i>
<b>Rob Kavanagh</b>	15/11/2022	Dr. A. Vidotto / Prof.dr. I.A.G. Snellen	<i>Tuning in to star-planet interactions at radio wavelengths</i>
<b>Martijn van Gelder</b>	24/11/2022	Prof.dr. E.F. van Dishoeck / Prof.dr. M.R. Hogerheijde	<i>Molecular inheritance from cloud to disk</i>
<b>Olivier Burggraaff</b>	13/12/2022	Prof.dr. Christoph Keller / Prof.dr. Martina Vijver	<i>Accessible remote sensing of water</i>
<b>Bas Zoutendijk</b>	14/12/2022	Prof.dr. Koen Kuijken / Prof.dr. Joop Schaye	<i>Lights in a sea of darkness</i>
<b>Turgay Çaglar</b>	21/12/2022	Prof.dr. Bernhard Brandl	<i>A well-established harmony in chaos</i>

# PUBLICATION OVERVIEW



Over the year 2022, scientists at Leiden Observatory have published a total of **568 articles in international refereed journals** – of these, **214** articles were in Astronomy and Astrophysics, **159** articles in Monthly Notices of the Royal Astronomical Society, **158** articles in American Astronomical Society Journals (Astrophysical Journal, Supplements and Letters, Astronomical Journal, Planetary Science Journal), and **2** in Nature.

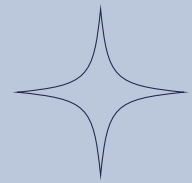


# COLLOQUIA AND LECTURES





# SCIENTIFIC COLLOQUIA

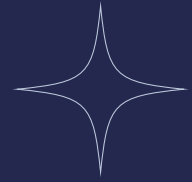


18/01/2022	<b>John Weaver</b>	Cosmic Dawn Center, University of Copenhagen	<i>COSMOS2020: Insights into galaxy formation and growth in the first 10 billion years</i>
31/01/2022	<b>Joanna Piotrowska</b>	University of Cambridge	<i>Quenching of star formation in observed and simulated central galaxies: Evidence for the role of integrated AGN feedback</i>
03/02/2022	<b>Brian Hare</b>	Kapteijn instituut	<i>LIFT: Lightning corona Imaging From a radio Telescope</i>
15/02/2022	<b>Gijs Mulders</b>	Universidad Adolfo Ibanez (Santiago, Chile)	<i>Exoplanet Demographics: Population Statistics of hot Super-Earths and Cold Jupiters</i>
03/03/2022	<b>Peter H Johansson</b>	Helsinki University	<i>Simulating black hole dynamics and gravitational wave emission in galaxy formation simulations</i>
10/03/2022	<b>Claudia Maraston</b>	Portsmouth	<i>Evolutionary population synthesis models</i>
17/03/2022	<b>Michael Wise</b>	SRON	<i>Space, the final frontier</i>
24/03/2022	<b>Michael Lewis</b>	British Museum	<i>The Significance of Halley's Comet in the Bayeux Tapestry</i>
28/03/2022	<b>Filip Husko</b>	Durham University	<i>Active galactic nuclei jets simulated with smoothed particle hydrodynamics</i>
29/03/2022	<b>Jack Singal</b>	University of Richmond	<i>The Radio Synchrotron Background – A Cosmic Conundrum</i>
31/03/2022	<b>Lisa Kaltenegger</b>	Carl Sagan Institute at Cornell University	<i>How to uncover the Mysteries of Rocky Exoplanets</i>
05/04/2022	<b>Edward Taylor</b>	Swinburne University of Technology	<i>The 4MOST Hemisphere Survey</i>
07/04/2022	<b>Heather Cegla</b>	Warwick University	<i>Harnessing the power of stars to unveil planets and our place in the cosmos</i>
14/04/2022	<b>Shin'ichiro Ando</b>	Universiteit van Amsterdam (GRAPPA)	<i>Formation and evolution of dark matter substructure: Semi-analytical approach</i>
21/04/2022	<b>Laura Scholz</b>	IAC Tenerife, Spain	<i>Dark matter halos as drivers of galaxy stellar populations</i>
28/04/2022	<b>Georges Meynet</b>	Geneva Observatory	<i>Stars at the Extreme: First Stars, Spinstars and Supermassive Stars</i>

12/05/2022	Ryan Wittingslow	Rijksuniversiteit Groningen	<i>A Conceptual Analysis of Artefact Function</i>
19/05/2022	Heino Falcke	Radboud Universiteit	<i>Studying nearby supermassive black holes at the event horizon scale</i>
02/06/2022	Jacques Kluska	University of Leuven	<i>Disks around evolved binaries: do they form second-generation planets?</i>
09/06/2022	Sarah White	Rhodes University	<i>New insights into active galaxies, via their radio emission</i>
23/06/2022	Marijke Haverkorn	Radboud Universiteit	<i>The Magnetic Field of the Milky Way</i>
30/06/2022	Mario van den Ancker	ESO	<i>Disk Evolution around Young Intermediate Mass Stars</i>
07/07/2022	Fabian Schneider	Heidelberg Institute for Theoretical Studies	<i>Turbulent Lives of Stars</i>
07/07/2022	Timmy Delage	MPIA Heidelberg	<i>Dead zone evolution: Toward a full coupling of gas and dust evolution with MRI calculations</i>
20/07/2022	Augustín Rost	Córdoba (Argentina)	<i>Gas shocks around cosmological filaments</i>
21/07/2022	Federico Stasyszyn	Córdoba (Argentina)	<i>Advances MHD in the SWIFT code</i>
02/08/2022	Oliver Hahn	University of Vienna	<i>Cosmology at the Interface of Numerical and Analytical Techniques</i>
01/09/2022	Jesse van de Sande	University of Sydney	<i>Dissecting the anatomy of the Milky Way through a chemo-dynamic analysis of its siblings</i>
08/09/2022	Shane Hengst	University of Southern Queensland (UniSQ)	<i>Debris Discs: a key component of planetary evolution</i>
20/09/2022	Matteo Guainazz	ESTEC	<i>Dirty Dancing: piercing the dusty environment of merging supermassive black holes</i>
22/09/2022	Philipp Moesta	Universiteit van Amsterdam (GRAPPA)	<i>Magnetic fields, jets, and turbulence in the multimessenger era</i>
28/09/2022	Molly Wolfson	UC Santa Barbara	<i>Constraining the mean free path of ionizing photons at <math>z &gt; 5</math> from the Lyman-alpha forest flux auto-correlation function</i>
12/10/2022	Venkaatesh Ramakrishnan	Universidad de Concepción	<i>Roadmap to a compendium of black hole images</i>
13/10/2022	Audrey Coutens	IRAP	<i>The chemical richness of solar-type protostars</i>
20/10/2022	Michael Murphy	Swinburne University	<i>Fundamental physics with solar twins</i>
28/10/2022	Lisa Lehmann	IRAP	<i>New method to rapidly diagnose the large-scale stellar magnetic field</i>

02/11/2022	<b>Piyush Sharda</b>	Leiden Observatory	<i>Using metals to trace multi-scale structure formation in galaxies</i>
03/11/2022	<b>Mariano Mendez</b>	Kapteijn instituut	<i>Coupling between the accreting corona and the relativistic jet in the microquasar GRS 1915+105</i>
08/11/2022	<b>Katy Proctor</b>	University of Western Australia	<i>Intra-halo light as a probe of galaxy assembly</i>
09/11/2022	<b>Aleksey Generozov</b>	Technion	<i>Formation and evolution of the young stars in the Galactic Center</i>
10/11/2022	<b>Matt Wilkinson</b>	University of Western Australia	<i>Are galaxy morphologies and kinematics reliable in the current generation of cosmological simulations?</i>
10/11/2022	<b>Enrico Barausse</b>	SISSA	<i>Environmental effects and matter systematics for low-frequency gravitational wave astronomy</i>
15/11/2022	<b>Oliver Jennrich</b>	ESTEC	<i>LISA – a mission to observe gravitational waves</i>
16/11/2022	<b>Jasleen Matharu</b>	Cosmic Dawn Center in Copenhagen	<i>Revealing how Star Formation and Quenching proceed in High Redshift Galaxies with Spatially Resolved Space-based Slitless Spectroscopy</i>
17/11/2022	<b>Geoffroy Lesur</b>	Université Grenoble Alpes	<i>Are magnetic fields shaping protoplanetary discs?</i>
23/11/2022	<b>Danielle Futselaar</b>		<i>Illustrating the Universe</i>
24/11/2022	<b>Adam Muzzin</b>	Leiden Observatory (guest) and York University, Toronto	<i>How to Build a Big Galaxy</i>
25/11/2022	<b>Eduardo Balbinot</b>	Leiden Observatory	<i>Stellar streams and their progenitors</i>
30/11/2022	<b>Dmitrij Titov</b>	European Space Agency	<i>Venus: an exoplanet next door</i>
01/12/2022	<b>Antonija Oklopčić</b>	Anton Pannekoek Institute	<i>Atmospheric escape in exoplanets</i>
02/12/2022	<b>Balpreet Kaur</b>	National Centre for Radio Astrophysics, Tata Institute of Fundamental Research	<i>Molecular gas in HI-absorption-selected galaxies at <math>z \sim 2</math></i>
05/12/2022	<b>Sebastian Pineda</b>	Laboratory for Atmospheric and Space Physics, CU Boulder	<i>Brown Dwarfs as Accessible Magnetic Analogs of Gas Giant Planets</i>
08/12/2022	<b>Freeke van de Voort</b>	Cardiff university	<i>Gas flows and metal enrichment in and around Milky Way-mass galaxies</i>
14/12/2022	<b>Eduardo Balbinot</b>	Leiden Observatory	<i>Stellar streams and their progenitors</i>
16/12/2022	<b>Ziggy Pleunis</b>	University of Toronto	<i>Uncovering the diversity of fast radio bursts</i>

# PHD COLLOQUIA



08/03/2022	<b>Nastasha Wijers</b>	<i>X-raying Extragalactic Gas: warm-hot gas in the EAGLE simulations</i>
12/04/2022	<b>Dilovan Serindag</b>	<i>Exploring Strange New Worlds with High-Dispersion Spectroscopy</i>
14/06/2022	<b>Gwenaelle Dufour</b>	<i>Non-linear astrochemical kinetics: Theory and Applications</i>
22/06/2022	<b>Xiaoyuan Zhang</b>	<i>From intracluster medium dynamics to particle acceleration</i>
05/07/2022	<b>Stijn Debackere</b>	<i>Aggravating matters – Accounting for baryons in cosmological analyses</i>
13/09/2022	<b>Anna de Graaff</b>	<i>Shaping Massive Galaxies: The structural evolution of galaxies across <math>0 &lt; z &lt; 1</math></i>
24/10/2022	<b>Amanda Mesquita</b>	<i>Exploring the interactions of M dwarf winds and cosmic rays</i>
08/11/2022	<b>Rob Kavanagh</b>	<i>Tuning in to star-planet interactions at radio wavelengths</i>
22/11/2022	<b>Martijn van Gelder</b>	<i>Molecular inheritance from cloud to disk: A story of complex organics and accretion shocks</i>
06/12/2022	<b>Olivier Burggraaf</b>	<i>Accessible remote sensing of water</i>
13/12/2022	<b>Bas Zoutendijk</b>	<i>Lights in a Sea of Darkness: Constraining the Nature and Properties of Dark Matter using the Stellar Kinematics in the Centres of Ultra-Faint Dwarf Galaxies</i>
20/12/2022	<b>Turgay Caglar</b>	<i>A well-established harmony in chaos: from isolated galaxies to galaxy clusters</i>

# EDUCATION



At the start of 2022, finally, the end of the Corona pandemic came into view. Omicron replaced delta, more and more Covid-19 measures were canceled, regular life slowly returned, and in March, the government asked Universities to return to 'normal' teaching, i.e., teaching on location with live streaming and recordings to re-watch. At that time, we already managed to have most of our exercise and practical classes as well as all exams on location. We were expecting that from Spring 2022 the Observatory would be full with students again, all day, but many of the lecture rooms remained largely empty. The new reality was that not even 25% of our students showed up during lectures on location, preferring the available online options. A problem that showed up in all University institutes. We decided to accept and to use the spring semester as a transition period to the new academic year, in which lectures were not any longer live streamed and recordings were made available only several weeks for the exam.

The start of a new academic year 2022-2023 was definitely special, as if Covid-19 never existed. We welcomed nearly two hundred 1st year students, populating our large lecture rooms, filled to the brim. Some 120 (international) master students occupying all available master office space. A Kaiser lounge filled with students collectively puzzling. The student found their way back. There was also a remarkable increase in the number of educational meetings. Hmm. The didactic take-aways from Covid-19 were implemented in our lectures. We introduced remote (online) teaching in guest lectures by experts. The option to re-watch lectures online was (and is) highly appreciated by the students. Moreover, we decided to keep the number of student TA's high. During Covid-19 this was absolutely necessary, as we had to deal with a larger number of smaller classes, but also later, we clearly saw a positive effect of this extra support.

Also, in 2022-2023, we started a new astronomy based Space Missions minor. This interdisciplinary thematic 30 EC program is provided by Delft University of Technology and Leiden University and combines the engineering and scientific domain of spaceflight. It's start was highly biased by the move of SRON to the science campus in Leiden in 2021 and the expectation is that in the next years Leiden and Delft students actively will cooperate with SRON scientists to address space mission questions.

So business as usual? Unfortunately not. There was a volcano eruption 15 km from the ING telescopes at La Palma, and the ALOP trip had to be canceled, once again. And there were other challenges. In 2022 the impact of nearly 2 years of Covid-19 became more and more visible. Lecturers and students who were hit hard,

directly, through long-covid, or loss of family or friends. It also became clear that the number of mental issues under students increased substantially. International master students who could not visit their family, bachelor students who run into substantial delays, persons who became socially isolated and depressed. The start of the war in the East and the constant thread of a worldwide conflict definitely did not help. We have worked hard on contacting students who were (are) experiencing problems, finding their way through our curriculum. Our study advisor, Wouter Schrier, plays a key role in this process.

Despite all these issues, we have been able to offer our full curriculum, including more than 150 bachelor and master research projects. The number of students who obtained a bachelor or master diploma was impressive. Many of our master students managed to enter a PhD program, either in Leiden or elsewhere. In 2022 also 6 temporary assistant professors obtained permanent positions and started contributing intensely to the Sterrenkunde and Astronomy courses, further decreasing the overall teaching load. The year 2022 was the year back to normal teaching. Let's hope we can stay there some time.

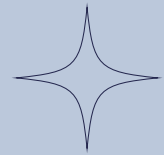
Harold Linnartz  
*Director of studies astronomy*



Harold Linnartz (16 October 1965 – 31 December 2023)

*In the final stages of preparing this annual report, the tragic news has reached us that Prof. Harold Linnartz passed away suddenly and unexpectedly on Sunday 31 December 2023. Harold was at the heart of our institute, as a researcher, as a supervisor, as education director and as head of the astrophysics lab. We will miss him dearly.*

# ACADEMIC COURSES AND PRE-UNIVERSITY PROGRAMMES



## BACHELOR COURSES

ACADEMIC YEAR 2021/2022

Astrobiology	<b>Fridlund</b>
Astronomical Observing Techniques	<b>Röttgering</b>
Astronomical Relativity	<b>Rossi</b>
Astronomy Lab and Observing Project	<b>Van Weeren</b>
Bachelor Project	<b>Linnartz</b>
Galaxies and Cosmology	<b>Hodge</b>
Inleiding Astrofysica	<b>Hoekstra</b>
Keerpunten in de Geschiedenis van de Natuurwetenschappen	<b>Van Lunteren</b>
Modern Astronomical Research	<b>Russo</b>
Planetenstelsels	<b>Brown</b>
Praktische sterrenkunde	<b>Monreal Ibero</b>
Programeermethoden	<b>Van Nieuwenburg/Müller-Brockhausen/Stolker</b>
Radiative Processes	<b>Hogerheijde</b>
Statistics AN I	<b>Hadji/Van Velzen</b>
Statistics AN II	<b>Hadji/Van Velzen</b>
Stars	<b>Snellen</b>
Statistics and Data Analysis	<b>Van Velzen</b>

## MASTER COURSES

ACADEMIC YEAR 2021/2022

Astrochemistry	<b>Van Dishoeck</b>
Astronomical Telescopes and Instruments	<b>Keller/Kenworthy</b>
Astronomy from Space	<b>Fridlund</b>
Design of Optical Systems	<b>Snik/Doelman</b>
Detection of Light	<b>Brandl/Burtscher</b>
Exo-planets: Interiors and Atmospheres	<b>Miguel</b>
High Contrast Imaging	<b>Kenworthy</b>
Interstellar Medium	<b>Van der Werf</b>
Large Scale Structure and Galaxy Formation	<b>Kuijken</b>
Modern Astrostatistics	<b>Sellentin</b>
Numerical Recipes in Astrophysics	<b>Van Daalen</b>
Observational Cosmology	<b>Bouwens</b>
Origin and Evolution of the Universe	<b>Schaye</b>
Radio Astronomy	<b>Shimwell/Brentjens</b>
Science and the public: contemporary and historical perspectives	<b>Van Lunteren</b>
Simulation and Modeling in Astrophysics (AMUSE)	<b>Portegies Zwart</b>
Stellar Structure and Evolution	<b>Viti</b>

# DEGREES AWARDED IN 2021/2022

A total of **43 students** obtained their Bachelor's Degree.

NAME	DATE	PRESENT POSITION
Lars Abbo	29/07/2022	MSc Astronomy, Leiden
Femke Ballieux	29/07/2022	MSc Astronomy and Cosmology, Leiden
Cas van Erp	29/07/2022	MSc Astronomy and Cosmology, Leiden
Levi van Es	30/06/2022	MSc Astronomy, Leiden
Justin Eussen	29/07/2022	MSc GRAPPA, UvA en VU
Louw Feenstra	29/07/2022	MSc Physics, Ludwig Maximilian Universität (München)
Remon van Gaalen	30/06/2022	MSc Astronomy, Leiden
Nikki Geesink	29/07/2022	MSc Astronomy and Cosmology, Leiden
Hannah van Gemert	30/06/2022	MSc Earth and Space Physics and Engineering, Danmarks Tekniske Universitet (DTU)
Wout Goesaert	29/07/2022	MSc Astronomy, Leiden
Rastko Hadži-Cenić	29/07/2022	MSc Astronomy and Data Science, Astronomy and Cosmology, Leiden
Milan Heinsohn Huala	29/07/2022	MSc Astronomy and Data Science, Leiden
Abraham Hilleman	29/07/2022	MSc Astronomy, Leiden
Eva van Houten	30/08/2022	MSc Computer Science, Leiden
Lotte Jansen	29/07/2022	MSc Astronomy, Leiden



<b>Yanick Kempenaars</b>	29/07/2022	MSc Aerospace Engineering (Space Flight track), TU Delft
<b>Lars Klijn</b>	29/07/2022	MSc Astronomy, Leiden
<b>Mark Knigge</b>	30/08/2022	MSc ICT & Business
<b>Niels Koppelaar</b>	29/07/2022	Unknown
<b>Koen Looijmans</b>	29/07/2022	MSc Astronomy & MSc Mathematics, Leiden
<b>Rik Luisman</b>	30/06/2022	MSc Astronomy Research, Leiden
<b>Tünde Meijer</b>	30/06/2022	MSc Astronomy Research, Leiden
<b>Camiel Meijer</b>	23/12/2022	Unknown
<b>Jasper Mens</b>	29/07/2022	MSc Astronomy and Data Science, Leiden
<b>Tessa Paauw</b>	30/11/2022	Unknown
<b>Julia Pessers</b>	29/07/2022	Unknown
<b>Silke Rice</b>	29/07/2022	MSc Wiskunde in Vancouver
<b>Lisanne Sikam</b>	29/07/2022	MSc Astronomy and Science Communication, Leiden
<b>Casper Spijker</b>	31/01/2022	MSc Astronomy, Leiden
<b>Jasper Steenbergen</b>	30/08/2022	MSc Physics, Leiden
<b>Hidde Stoffels</b>	30/06/2022	MSc Theoretical Physics, UvA
<b>Jelmer Stroo</b>	29/07/2022	MSc Astronomy, Leiden
<b>Luuk Tijssen</b>	29/07/2022	MSc Aerospace Engineering, TU Delft
<b>Wouter van Tol</b>	30/06/2022	MSc Astronomy and Data Science, Leiden
<b>Carmen Turner</b>	29/07/2022	MSc Astronomy, Leiden
<b>Jim van Veenhuizen</b>	29/07/2022	MSc Astronomy, Leiden
<b>João van der Ven</b>	29/07/2022	MSc Physics, Leiden
<b>Stan Verhoeve</b>	30/06/2022	MSc Astronomy, Leiden
<b>Constantijn Vleugels</b>	29/07/2022	MSc Astronomy Research, Leiden
<b>Diederick Vroom</b>	29/07/2022	MSc Astronomy and Cosmology, Leiden
<b>Ryan van der Werf</b>	29/07/2022	MSc Astronomy and Business Studies, Leiden
<b>Tom van der Wielen</b>	30/06/2022	MSc Astronomy and Instrumentation, Leiden
<b>Anouk Zuiderwijk</b>	31/05/2022	MSc Astronomy Research, Leiden

# DEGREES AWARDED IN 2021/2022

A total of **37 students** obtained their Master's Degree.

NAME	DATE	PRESENT POSITION
Mel Voet	31/01/2022	Journalist at the Mare
Maria Anna Patatoukou	31/01/2022	Unknown
Vanesa Ramirez Gomez	31/01/2022	Design Engineer at ASML
Andy Schmit	31/01/2022	Young Graduate Trainee at ESTEC
Lixuan Zhang	31/01/2022	Consultant at KPMG Nederland in financial risk management
Kas Veken	31/01/2022	Unknown
Kasper Roewen	31/01/2022	Unknown
Silvan Toet	31/01/2022	Junior Scientist Innovator at TNO Defense, Safety and Security   MSc Astronomy and Research
Naadiyah Jagga	31/01/2022	Unknown
Gabriel Fuentes	29/04/2022	Teaching at StudieStapper
Arend Moerman	30/06/2022	PhD researcher at Leiden Observatory
Rodolfo Dernini	30/06/2022	Unknown

<b>Sam de Regt</b>	30/06/2022	PhD researcher at Leiden Observatory
<b>Theodoros Topkaras</b>	30/06/2022	Unknown
<b>Stan Barentloo</b>	30/06/2022	PhD researcher at Stockholm University, Sweden
<b>Josephine Baggen</b>	30/06/2022	PhD researcher at Yale
<b>Jeger Broxterman</b>	30/06/2022	PhD researcher at Leiden Observatory and Leiden Institute of Physics
<b>Xinrui Shan</b>	30/06/2022	Unknown
<b>Victorine Buiten</b>	30/06/2022	PhD researcher at Leiden Observatory
<b>Pim Dröge</b>	30/06/2022	Unknown
<b>Sanne Bloot</b>	30/06/2022	Unknown
<b>Dimitris Chatziannakis</b>	29/07/2022	Unknown
<b>Daniel Dekkers</b>	29/07/2022	Instructor at Mad Science Netherlands
<b>Marissa Vlasblom</b>	29/07/2022	Research Intern at ESA-ESTEC
<b>Milou Temmink</b>	29/07/2022	PhD researcher at Leiden Observatory
<b>Simin Tong</b>	29/07/2022	PhD researcher at University of Leicester
<b>Julius Hendrix</b>	29/07/2022	R&D job at innovation department Fugro
<b>Yipeng Lyu</b>	29/07/2022	Unknown
<b>Jaro Molenkamp</b>	29/07/2022	Unknown
<b>Matthijs van Groeningen</b>	29/07/2022	Unknown
<b>Gijs Vermariën</b>	29/07/2022	PhD researcher at Leiden Observatory
<b>Mariam Abdallah</b>	29/07/2022	Advanced Masters in Artificial Intelligence program at KU Leuven, Belgium
<b>Tian Li</b>	29/07/2022	Unknown
<b>Shravya Shenoy</b>	29/07/2022	PhD researcher at University of Hertfordshire
<b>Ashmara Wederfoort</b>	30/08/2022	Unknown
<b>Sicen Guo</b>	30/08/2022	PhD researcher in CEA Saclay
<b>David van Dop</b>	30/08/2022	Teaching at TechnoLab

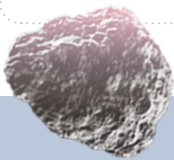
# PUBLIC ENGAGEMENT WITH ASTRONOMY

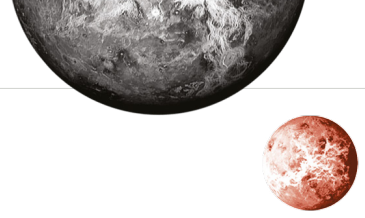


# ASTRONOMY & SOCIETY PROJECTS 2022 HIGHLIGHTS



The aim of Leiden Observatory, and specifically of the Astronomy & Society Group, is to engage the public with the wonders of the Universe and share the scientific, technological, cultural and educational aspects of astronomy with society.





## Oude Sterrewacht Leiden

The Old Observatory features exhibitions that connect astronomy & society. It is also an experimental space for new approaches to inform and engage the public with astronomy and science. In 2020, Leiden Observatory hosted the More-than-planet Exhibition in collaboration with De Waag.

[www.oudesterrewacht.nl](http://www.oudesterrewacht.nl)



## Space Scoop

Space Scoop brings you the latest astronomy news from across the Universe in a language that's easy to understand. Each Space Scoop begins with a new discovery or image from space. Our partners write a press release that is then shared with us. Four SpaceScoop articles are published each month.

[www.spacescoop.org](http://www.spacescoop.org)



## Space Telescope, JWST

The space telescope JWST has been one of the primary science and technology stories of 2022. The Dutch astronomy community has been deeply involved for the last two years in showcasing the scientific and technological contributions of the JWST to society in the broadest possible way. Its innovative communication includes diverse approaches, venues and, most importantly, broad audiences: school children to policy-makers. The Astronomy&Society group supported these initiatives, such as the First images released at the Rijksmuseum Boerhaave or the first exhibition at the LUMC.



## Universe Awareness

The programme aimed to introduce children to the idea of global citizenship at a crucial stage of their development – to show them that they are part of an international community. Until the advent of UNAWE, there were no large-scale attempts to use astronomy as a tool for inspiring and educating young children. UNAWE was active in 63 countries and Leiden University Observatory was the founder and coordinator of the programme.

[www.unawe.org](http://www.unawe.org)



## The International Day of Light

The International Day of Light is a global initiative that provides an annual focal point for the continued appreciation of light and the role it plays in science, culture and art, education, and sustainable development, and in fields as diverse as medicine, communications, and energy.

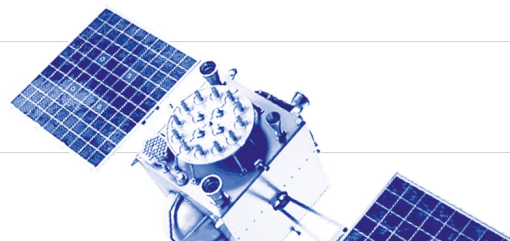
[www.LightDay.org](http://www.LightDay.org)



## Open Science Hub Network

OSHub.Network established a European network of 8 community hubs – OSHubs – , that work as mediators in each local community, positioning schools as active agents for collaboration between families, universities, research institutes, industry, enterprises, media, local governments, civil society organizations, and wider society, by engaging in real-life projects that meet societal needs.

[opensciencehub.net](http://opensciencehub.net)





## IAU European Regional Office of Astronomy for Development

This office carries out and coordinates relevant astronomy-for-development activities in Europe, focusing on accomplishing the United Nations Sustainable Development Goals in Europe, but also globally. The E-ROAD works closely with its sister offices around the world to foster development everywhere. All E-ROAD initiatives in Europe will be carried out in cooperation with existing activities of pan-European and national astronomical organisations.

[www.astro4dev.eu](http://www.astro4dev.eu)



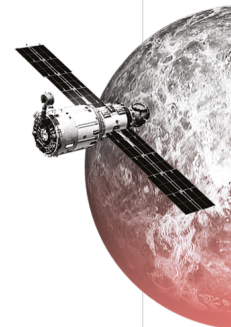
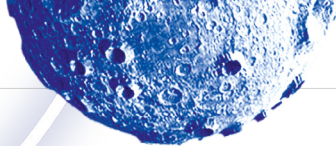
## SKIES – SKilled, Innovative and Entrepreneurial Scientists

The EU-funded SKIES project provided for PhD and 1st-year postdoctoral researchers in the field of astronomy with a new set of skills integrating open science, innovation and entrepreneurship. With this, PhD students and junior astronomers gained substantial experience equipping them for a career to fulfil their potential and contribute to society and the economy. The project was completed in 2022.

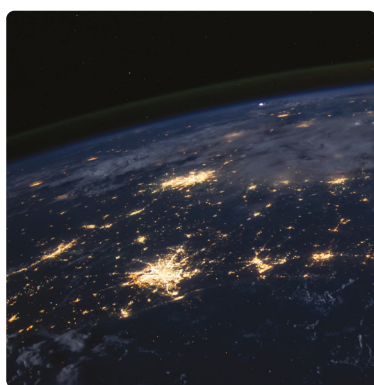
<https://t.ly/EGjSD>







## GlobalSCAPE: Global Science Communication and Perception



Science communication is a global field of research and practice central to the relationship between science and society. While recent large-scale studies of science communication have focused on European and Western contexts, the EU-funded GlobalSCAPE project contributes to a more comprehensive picture of science communication by focusing on science communication professionals working in non-Western countries and in regions where science communication can be challenging or under-valued.

[global-scape.eu](http://global-scape.eu)

## Leiden 2022: European City of Science



Leiden European City of Science 2022 was a 365-day science festival packed with activities, lectures, workshops, excursions, exhibitions, and events, for anyone with a curious mind. In 2022, Leiden was the Dutch stage of the European scientific world. The major issues of our time will be discussed during countless conferences and special meetings. Simultaneously, with and for residents of the city and region, we will design an exciting program in which every day is centred around a different, intriguing topic. Astronomy&Society co-organised dozens of events for the European City of Science including the participation in the Seeing Stars.

# SOCIAL NETWORKING



## L.A.D. 'F. Kaiser'

With L.A.D. 'F. Kaiser' (Association for Astronomy Students in Leiden), astronomy sub-association of the study association De Leidsche Flesch, we had a great year with lots of fun activities, observing nights, workshops, and lectures. Whereas the observatory offices are all located in the Huygens and Oort building, our members can spend time at the beautiful Old Observatory in the city center. Like everyone else, we still struggled with covid at the beginning of the year and our activities had to remain online. Luckily everything opened up again just in time for the yearly Kaiser Spring Lectures in March. For the first time in two years, we were able to have four inspiring lectures again in person at the Old Observatory. All in line with this year's theme, 'through the looking glass', Leiden Observatory professors Mariska Kriek and Huib Jan van Langevelde gave talks about the James Webb Space Telescope and the Event Horizon Telescope. Since 2022 was the year of Leiden Science we organized the first ever "Kaiser-Kapteyn Day: The Day of the Astronomer" on the 18th of June. This was a day filled with lectures, workshops, and activities for all ages, a lot of Kaiser members helped with the organization alongside the WLS (Werkgroep Leidse Sterrewacht, an amateur association that, in addition to organising public activities, is also heavily involved in maintaining the historical telescopes in the Old Observatory).

Although we love to do science communication at Kaiser, our main aim is organizing activities for our members which are mainly astronomy bachelor and master students. For our student members, we organized various activities like an astrophotography workshop, karaoke night, pancake dinner, borrels, Christmas cookie dec-

orating, and more. Being an astronomy sub-association that spends a lot of time at the Old Observatory a large part of our activities is of course observing with the historic telescopes. To organize these observing nights we have an observing committee. Even though the success of observing depends on the weather they always made sure it was a great evening. Sometimes there were more board games than observations due to the clouds, but we have also been able to take some pretty pictures of the Moon, Saturn, and our other neighbors in the Solar System. Not only were our student members able to do observations, we also showed a big group of PhD students and postdocs the telescopes at our staff observing night. One of our aims for the past year was to create more connections between students, staff, and alumni. Another example of this is the mentor lunch we organized together with the Vo-S, the alumni organization of the Observatory, a great way for students to ask all their important and not-so-important questions about different career paths.

During the year the historical committee worked hard on creating a booklet on Kaiser for the upcoming lustrum year, on the first of March in 2023 we will celebrate our 30th birthday. Lots of interviews have been done and we cannot wait for the result to be revealed next year. 2023 will be all about celebrating the lustrum with special activities and we even installed a lustrum committee to organize a hopefully spectacular lustrum gala at the Old Observatory.

To make the above activities possible, L.A.D. 'F. Kaiser' has an annual board that changes every year in August.





**The 2022/2023 board consists of:**

Nikki Geesink (*Praeses*), Zsófia Szalavári (*Ab-Actis & Assessor Outreach*), Pepijn Smals (*Quaestor*), Tom van der Wielen (*Vice-Praeses & Assessor Old Observatory*), Puck Rooijackers (*Assessor Old Observatory August 2022 – December 2022*) and Melvin Alken (*Assessor Old Observatory January 2023 – July 2023*).

**The 2021/2022 board consisted of:**

Puck Rooijackers (*Praeses*), Marieke Visscher (*Ab-Actis*), Maurien van der Linde (*Quaestor*), Sharon Diamant (*Vice-Praeses & Assessor Old Observatory*), Shravya Shenoy (*Assessor Old Observatory*) and Carlijn Veldhuis (*Assessor Outreach*).

## VO-S the Leiden Observatory Alumni Association

The Vereniging van Oud-Sterrewachters (“VO-S”) is the Leiden Observatory alumni association. The VO-S organises several activities during the year for (under)

graduates and staff that have left Leiden Observatory, not only to keep social ties between alumni alive, but also to feed their general interest in astronomical research.



Three board members of the 2021 VO-S.

### Join the VO-S!

The association has nearly 150 members, with membership open to all Leiden Observatory alumni and staff.

**For contact and membership of our alumni association:**

- visit our website: <http://www.vo-s.nl>
- send an email: [vo-s@strw.leidenuniv.nl](mailto:vo-s@strw.leidenuniv.nl)

**VO-S Committee:**

- Niels van Weeren (*chair*)
- Maaïke Damen (*secretary*)
- Gerben Zwart (*treasurer*)
- Anthony Brown (*Leiden Observatory liaison*)

# OBITUARIES



# Maarten Schmidt (1929 – 2022): the Leiden roots

On September 17, Maarten ('Mart') Schmidt died at his eldest daughter's home in Fresno, California where he had moved after the death of his wife Corrie a few years earlier. Mart belonged to the first postwar cohort of young Leiden astronomers supervised by Jan Oort. For ten years (1949-1959), he was part of the Leiden Sterrewacht, but the remainder of his career took place in the United States. There he made the discovery for which he world-famous: despite their outward appearance, quasi-stellar objects such as the radio source 3C273 are not local stars in the Milky Way but rather extremely luminous objects unimaginably more distant. This groundbreaking discovery started a revolution in astronomy, opened the window on the early universe, brought Schmidt the March 11, 1966, front cover of the weekly Time magazine, and decades later also the 2008 Kavli Prize for Astrophysics.

Mart grew up in Groningen. His interest in astronomy was awakened in the summer of 1942 by his uncle Dik Schmidt (1909-1992), a Bussum pharmacist and a passionate amateur astronomer. Maarten and his school friend Jan Borgman (1929-2021) built their own telescope and after the Second World War ended, he and Jan started their study of astronomy despite its poor career prospects. His study went well: he was living at his parent's home, in provincial towns like Groningen there was little distraction in the lean postwar years, and the curriculum was not so extensive as now. When his graduation in 1949 came closer, Jan Oort suggested at the annual meeting of Dutch astronomers that he would come to work at the Leiden Observatory after finishing in Groningen. This informal invitation was the usual way of recruiting in the small world of Dutch astronomy.

Schmidt was, however, drafted by the Dutch Army almost immediately after his arrival in Leiden but as Indonesian independence was recognised soon after, he narrowly escaped deployment to Southeast Asia and soon returned to Leiden. There, Oort had just published his Comet Cloud hypothesis on the origin of comets and he asked Schmidt to go through the literature and find out how their brightness changes as they travel from the edges of the solar system towards the sun. Even before this work was finished, Oort came up with another, exciting proposal. Schmidt would travel by steamship from war-torn Europe to Mombasa in tropical Africa, on

to Nairobi and the Kenyan highlands and join Gijs van Herk on the equator in the accurate determination of the absolute stellar declinations complementing the precise right ascensions already measured with the Leiden meridian instrument. After more than a year, the work was done and Mart returned by the Congo river straight through Africa to Cape Town and from there by steamer to London and Rotterdam. In December 1951, less than two weeks ahead of his 22nd birthday he finally arrived back in Leiden. Only then he learnt the big news that the 21-cm radio spectral line of neutral hydrogen predicted by Van de Hulst had been detected in the meantime.

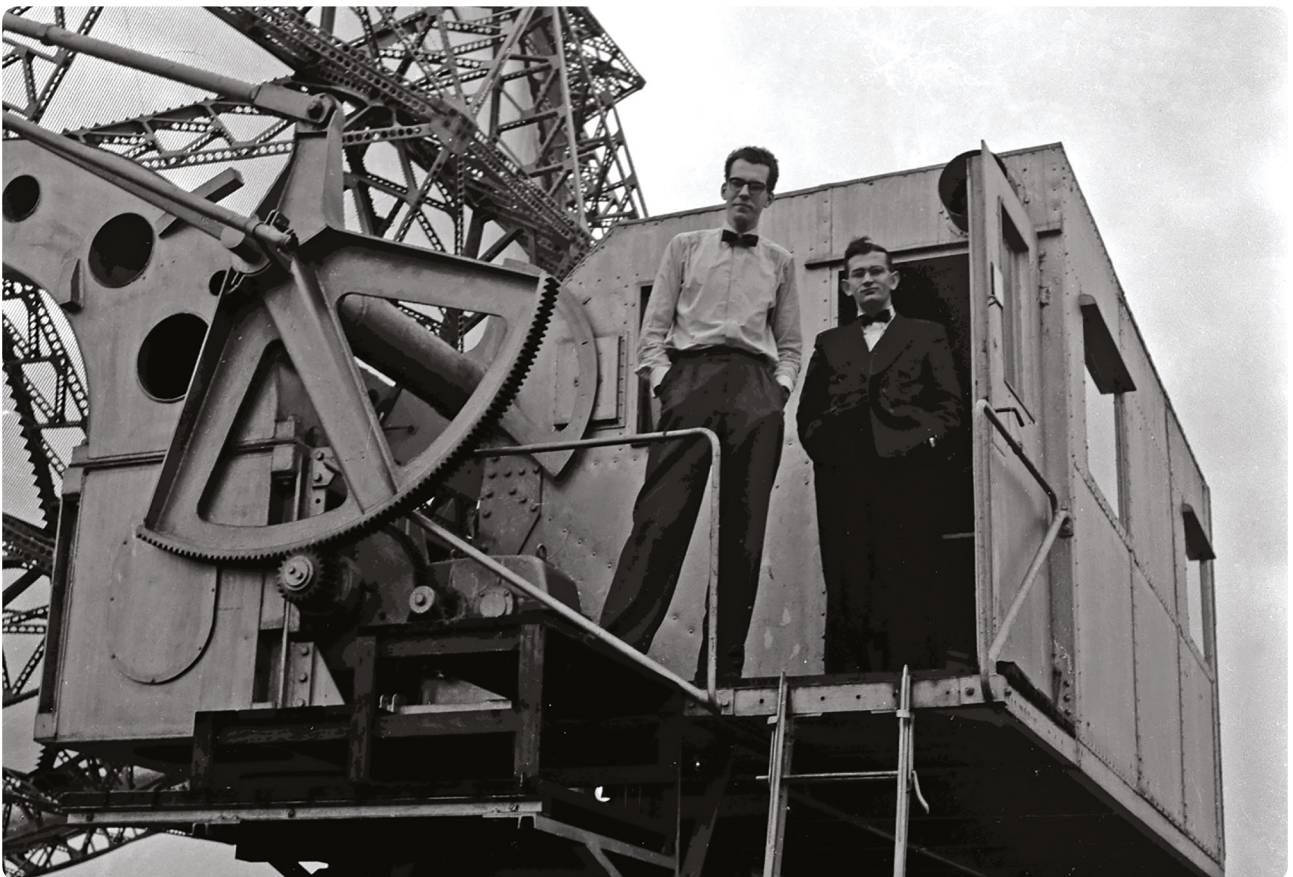
This changed everything. Oort had been awaiting this detection for years and lost no time to start mapping the galaxy. This was done in the course of 1953 and 1954 with an old German Wurzburg radar mirror on the Veluwe near 'radio quiet' Kootwijk. There were no modern electronic computers. Telescope guidance and control, signal recording and readout, analysing and displaying the results and displaying was a routine and time-consuming work all done by the hands of Mart Schmidt and his fellow students Gert Westerhout (1927-2012), King Kwee (1927-2023), and Huug van Woerden (1929-2000). Not only did they work long days at the Sterrewacht but they also lived there, sharing the cottage at number 4. In order to break the resulting social isolation, Mieke Oort organised evening parties at the Oort mansion at number 13 where she also invited girl students from the nearby Haanstra training school for nursery teachers at Rapenburg 129 to create a more festive atmosphere. At one such party in 1954, Mart Schmidt met Corrie Tom, five years his junior, whom he married the following year. In that same year 1954, the map of the outer parts of the Milky Way and the rotation curve of the inner parts were determined, forming the empirical basis for the models of the distribution of mass in the Galaxy that Mart developed for his PhD thesis which he defended in 1956. Oort had intended to award him a 'cum laude' but the faculty board of science objected to this 'since the great Lorentz who won the 1902 Nobel Prize for Physics had not been awarded a cum laude either'. Schmidt had a tenured position in Leiden but obtained a leave of absence for a two-year Carnegie Fellowship at Hale Observatories in Pasadena. There he tried unsuccessfully to identify spiral structure optically with distant open star clusters. A meeting with his fel-

low Dutchman Sydney van den Bergh (born 1929), who had gone to the U.S. already in 1948, raised his interest in star formation and led to the 'Schmidt law' that defines the connection between the gas surface density and the rate of star formation per unit surface area. The return to Leiden in 1958 was not easy for Mart. He had gotten used to the weather and telescopes in southern California and he was unhappy with his relatively junior position in Leiden. There was a housing shortage in the Netherlands and rental houses were expensive. When he was offered a professorship at the California Institute of Technology, he did not hesitate long and left the Netherlands in 1959 for good.

For a brief moment in 1970, that seemed about to change. Oort retired and was happy to see the competent Schmidt as his successor. Mart had the same orderly and goal-oriented approach. He did not let himself be guided by major theoretical questions, but instead always asked himself which observations were enabled current technology and what questions these would

answer. He avoided large collaborations and preferred working alone, with a single graduate student, or at most one or two close colleagues. At Oort's request, Mart paid an extensive visit to Leiden and the Observatory, talked to the staff – most of whom he already knew – and learned about the exciting possibilities offered by the new Westerbork telescope and the ambitious European collaboration to build a major southern hemisphere observatory in Chile. In the end, he decided to stay in California and decline the Leiden directorship despite an urgent last-minute appeal by Oort. The step was too big, Corrie had less pleasant memories of Leiden than he, the whole family was well-established in prosperous Pasadena.

He always welcomed Leiden visitors to his affluent house just opposite the Caltech campus, and enjoyed talking about friends and colleagues of old. Despite his ready smile and extrovert bow tie he was, however, a private person, and throughout his long American career he remained true to his solid Dutch origins.



Maarten Schmidt (l) and Gert Westerhout (r) observing the Galaxy with the Kootwijk HI Würzburg radio telescope. Credit: [www.camras.nl](http://www.camras.nl)

# In Memoriam:

## Carolina Ödman-Govender

### 3.07.1974 – 15.11.2022

The department was saddened by the tragic death of Carolina Ödman, Professor of Astrophysics at South Africa's University of the Western Cape, at the age of 48. Carolina worked at Leiden Observatory from 2004 until 2009, where she managed the Universe Awareness programme. She left an indelible mark behind her.

Universe Awareness uses the immensity and beauty of the Universe to excite and stimulate a sense of perspective and globalism in young children throughout the world, aged 4 – 10. Supported by funds from my Netherlands Royal Academy Professorship, Carolina built up "Universe Awareness", from an idea into an activity that reached more than 400,000 young children in about 60 countries. For this achievement she was awarded the 2012 SPORE Prize by Science Magazine and the Special Executive Committee Award for Astronomy Outreach, Development and Education by the International Astronomical Union. In 2006, through her activities for the Universe Awareness Project at Leiden, she met her future husband, Kevin Govender, Director of the newly established IAU Office of Astronomy for Development in Cape Town.

Originally from Sweden, Carolina grew up in Switzerland and obtained her PhD in Cambridge, England. All of us who knew her at Leiden remember her inspirational joyous, positive and broad outlook on life, her many impressive achievements and her sparkling delightful personality. Carolina was special for Leiden Observatory in many ways.

There was her enormous enthusiasm for the goals of Universe Awareness – to advance the SDGs of globalism and peace by reaching young children with the wonder and perspective of the Universe, at an age when their value systems were forming. The message of globalism and peace, that resounded so loudly and clearly at her funeral from blessings from adherents of six of the most important world faiths, demonstrated how they all have so much in common and was a fitting remembrance of her life and achievements.

There was her exceptionally diplomatic personality that exuded positivity and inspiration, no matter who she was

dealing with in countries all over the world. Her ability to interact with and inspire everyone, independent of their nationality or background was incredible.

There was her love of all things. When she visited schools, it was obvious that she loved children – long before she and Kevin produced their marvellous sons, Xavier and Cyprian in which she lives on. But she also loved animals and plants of all sorts and our planet as a whole.

There was her artistic nature, that was so much in demand that many of our staff asked her to design logos for their projects. She always generously agreed.

Carolina Ödman was diagnosed with pancreatic cancer in early 2018. She fought this terrible disease bravely until her untimely death on 15 November at the age of 48. She was a role model for future generations and we are proud that she spent 5 years on our staff.

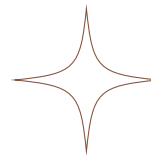




# ORGANISATION



# OBSERVATORY STAFF



## Full Professors

Prof.dr. B.R. Brandl  
Prof.dr. E.F. van Dishoeck  
Prof.dr. M. Franx  
Prof.dr. J.F. Hennawi  
Prof.dr. H. Hoekstra  
Prof.dr. M.R. Hogerheijde  
Prof.dr. C.U. Keller  
Prof.dr. M.T. Kriek  
Prof.dr. K.H. Kuijken  
Prof.dr. H.V.J. Linnartz  
Prof.dr. F.H. van Lunteren  
Prof.dr. S.F. Portegies Zwart  
Prof.dr. H.J.A. Rottgering  
Prof.dr. J. Schaye  
Prof.dr. I.A.G. Snellen  
Prof.dr. A.G.G.M. Tielens  
Prof.dr. S. Viti  
Prof.dr. P.P. van der Werf  
Prof.dr. P.T. de Zeeuw

## Affiliate Professors

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Prof.dr. L. Kreidberg  
*Max Planck Institute for Astronomy*  
Prof.dr. N.J. Doelman  
*J.H. Oortfonds, TNO*  
Prof.dr. P. Ehrenfreund  
*President ISU, president IAF*

Prof.dr. M.A. Garrett  
*University of Manchester*

Prof.dr. C.A. Jackson  
*ASTRON*

Prof.dr. J.S. Kaastra  
*Senior Scientist SRON*

Prof.dr. H.J. van Langevelde  
*JIVE / EHT Director*

## Associate / Assistant Professors and Senior Researchers

---

Dr. R.J. Bouwens  
Dr. A.G.A. Brown  
Dr. M. Cautun  
Dr. K. Chuang  
Dr. M.P. van Daalen  
Dr. A. Vidotto  
Dr. J.A. Hodge  
Dr. C.M.V. Impellizzeri  
Dr. M.A. Kenworthy  
Dr. A.L.M. Lamberts  
Dr. N. van der Marel  
Dr. M.K. McClure  
Dr. Y. Miguel  
Dr. A. Monreal Ibero  
Dr. P.M. Rodrigues Dos Santos Russo  
Dr. E.M. Rossi  
Dr. E. Sellentin  
Dr.ir. F. Snik  
Dr. T. Stolker

Dr. S. van Velzen  
Dr. R.J. van Weeren  
Dr. M. Schaller  
Dr. L.H. Burtscher  
Dr. R. Stuik

## Long Term Guests

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Dr. M.A. Brentjens  
Dr. J. Brinchmann  
Dr. X. Cai  
Dr. S.M. Cazaux  
Dr. N.E. Chisari  
Dr.ir. N.J. Doelman  
Prof.dr. B.A.C.H.J.S. Foing  
Ir. D. Gasman  
Y. Gu, MSc  
Dr. R.H. Hammerschlag  
Dr. E.C. Herenz  
J.N.F. Heyl, MSc  
Dr. K. Kakiichi  
Dr. M. Kazandjian  
M.E. Keil, MSc  
Dr. B. Lankhaar  
Dr. P. López  
Dr. J.A. Meisner  
Prof. A.V. Muzzin  
Dr. J.B.R. Oonk  
Dr. F.I. Pelupessy  
Dr. J.S. Pineda  
Dr. S. Plöckinger  
Dr. G.P. Rosotti  
Dr. D. Schleier  
Dr. T.W. Shimwell

Dr. A. Simionescu  
Dr. F.A. Stasyszyn  
Dr. D.V. Titov  
Dr. J. Albert  
Dr. L.A. Boogaard  
Dr. J. Bouwman  
Dr. G. Di Gennaro  
Dr. K.J. Duncan  
Dr. A. Hacar Gonzalez  
Dr. U. Kavak  
Dr. A. Mushtukov  
Dr. C.H.M. Pabst  
Dr. M. Rybak  
Dr. M. Stefanon  
Dr.ing. J. Terwisscha van Scheltinga  
Dr. L. Vallini

## Temporary Staff, Postdocs, Project Personnel

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Dr. S. Rezaei Badafshani  
Dr. A. Ahmadi  
Dr. M.I. Alves Vicente  
Dr. M. Arias de Saavedra Benitez *VENI Fellow*  
Dr. Y.M. Bahé *VENI Fellow*  
Dr. E. Balbinot  
Dr. A.R. Bemis  
Dr. A.S. Booth  
Dr. A. Botteon  
Dr. M.M.E. Bouvier  
Dr. T. Çağlar  
Dr. J.R. Callingham *VENI Fellow*  
Dr. A. Castro Ginard  
Dr. N.M. Crouzet

Dr. D.S. Doelman  
Dr. C.C. Doughty  
Dr. F.A. Driessen  
Dr. D.F. Evensberget  
Dr. L.K.S. Francis  
Dr. S.N. Gandhi *Oort Fellow*  
Dr. C.J. Garcia Vergara  
Dr. S.T. Geen  
Dr. M.L. van Gelder  
Dr. C. Ginski  
Dr. A.G. de Graaff  
Dr. G. Hazra  
Dr. J.R. Holdship  
Dr. H.R. Hrodmarsson *Marie Curie Fellow*  
Dr. K.Y. Huang  
Dr. A.P.S. Hygate  
Dr. K.S. Immer  
Dr. J.T.A. de Jong  
Dr. Z.P. Kostrzewa-Rutkowska  
Dr. S.K. Leslie *Oort Fellow*  
Dr. P.E. Mancera Piña  
Dr. W.R. Monteiro Rocha  
Dr. A. Mushtukov *VENI Fellow*  
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Dr. M. Raouf Hajar Zarrin  
Dr. ir. I.D. Roberts  
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Dr. A. Sanchez Lopez  
Dr. M.B. Sanchez  
Dr. J.T. Schindler  
Dr. P. Sharda  
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Dr. J. Varga  
Dr. J.R. Westernacher-Schneider  
Dr. W.L. Williams  
Dr. H. Ye  
Dr. T.A. Nutma

## Promovendi / PhD Students

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S.L. Ahad, MSc  
A.P. Allan, MSc  
A. Balaudo, MSc *De Sitter Fellow*  
Dr. A.G. Barr  
Z. Belcheva, MSc  
G. Bettoni, MSc  
E.P. Boven, MSc  
J.R. Braspenning, MSc  
J.C. Broxterman, MSc  
N.G.C. Brunken, MSc  
C.P.A. van Buchem, MSc  
V.A. Buiten, MSc  
Dr. M. Bulak *Marie Curie Fellow*  
Dr. O. Burggraaff  
K.M. Butler, MSc  
J.J. Butterworth, MSc  
J. de Carvalho Santos, MSc  
E. Chaikin, MSc *Marie Curie Fellow*  
Y. Chen, MSc  
C.M.T. Cheng, MSc

Dr. O. Contigiani	<i>De Sitter Fellow</i>	C. Li, MSc	
D.M. van Dam, MSc		S. Li, MSc	<i>De Sitter Fellow</i>
Dr. S.N.B. Debackere	<i>De Sitter Fellow</i>	P. Liu, MSc	
F.M. Derkink, MSc		J.Y. Liu, MSc	
P. Dorval, MSc		A.J. Louca, MSc	
Dr. G.C. Dufour		A. Manrique Yus, MSc	
Dr. F.A.F. Evans		M.N. McCabe, MSc	
F.J. Fagginger Auer, MSc		J.W.F. Mes, MSc	<i>Prieneke van Hoeve Fellow</i>
M. Frias Castillo, MSc		Dr. A.L. Mesquita	
V. Gamez Rosas, MSc		R.I.J. Mostert, MSc	
Dr. M.L. van Gelder		W. Mulder, MSc	
C.C. Giese, MSc		P. Nazari, MSc	
A.J. Gloudemans, MSc		F.S.J. Nobels, MSc	
Dr. M. Gomes Rachid		M.S.S.L. Oei, MSc	
Dr. A.G. de Graaff	<i>De Sitter Fellow</i>	S. Onorato, MSc	
C. Groeneveld, MSc		E. Osinga, MSc	
Ing. O.M. Guerra Alvarado		T. Pan, MSc	
L.N.A. van Haastere, MSc		S. Panchagnula, MSc	<i>Marie Curie Fellow</i>
S. Heikamp, MSc		T.P. Paneque Carreño, MSc	
T. Herard, MSc		E. Pizzati, MSc	
S. Huang, MSc		V.M. Radhakrishnan, MSc	
A.F. Izquierdo Cartagena, MPhil		S. de Regt, MSc	
J.M.G.H.J. de Jong, MSc		Dr. L.J. Reinders	
Ing. J. Kamer		Dr. S. Reino	
O.A. Karapiperis, MSc		C. Rogers, MSc	
Dr. R.D. Kavanagh		A.A. Rota, MSc	
T. Kist, MSc		L.E. Rowland, MSc	
E. Kleisioti, MSc		P. Samarth, MSc	
R.H. Kugel, MSc		S.T.M. Schouws, MSc	
L. Lamblin, MSc		M.E. Seppälä, MSc	
R. Landman, MSc		Dr. D.B. Serindag	
M. Leemker, MSc		N. Shchutskyi, MSc	
I.F. van Leeuwen, MSc		K. Slavicinska, MSc	

L.M. Stapper, MSc  
T.A. Stockmans, MSc  
L. Stofanová, MSc  
K.M. Strickert, MSc  
J.A. Sturm, MSc  
Y. Sun, MSc  
F. Sweijen, MSc  
M. Temmink, MSc  
R. Timmerman, MSc  
V. Saz Ulibarrena, MSc  
S. Verberne, MSc  
G.J.P.W. Vermariën, MSc  
N. Veronesi, MSc  
M. Vlasblom, MSc  
D. van der Vlugt, MSc  
B. Wang, MSc  
Dr. N.A. Wijers  
M.J.C. Wilhelm, MSc  
Drs. P.T. van Wingerden  
Dr. L.B. Wölfer  
S. Zhai, MSc  
Dr. X. Zhang  
Dr. Y. Zhang  
X. Zheng, MSc  
X. Zheng, MSc  
Z. Zhu, MSc  
S. Zieba, MSc  
Dr. M. Zilinskas  
Dr. S.L. Zoutendijk

## Astronomy & Society

---

M. De Sousa Rodrigues, MSc  
*Space Scoop / Science Editor*

Dr. K. Frantseva  
*IAU Project Developer*

A.D.A. van Gammeren, MSc  
*Old Observatory Coordinator/ Open Science Hub.Net  
National Project Manager*

G.Y. Marshall  
*IAU Fundraiser*

G. Paulose, MSc  
*International Day of Light Project Manager/ Science Editor*

Prof. dr. S.M. Pompea  
*Guest Professor*

Dr. G. Pugliese  
*SKIES Trainer*

Dr. P. Russo  
*Assistant Professor & Group Leader*

N.M.A. Scheinowitz, MSc  
*Old Observatory Coordinator*

A.R. Taylor, MSc  
*Events & Exhibition Coordinator*

C.L. Turner, BSc  
*Student Coordinator Old Observatory*

Drs. M. Willebrands  
*IAU Office of Astronomy for Development Coordinator*

## Support Staff

---

Drs. M. Balkestein  
*Management / Office Assistant*

Drs. E. Gerstel  
*Institute Manager*

R. Hölscher, MSc  
*Assistant Institute Manager (starting October)*

M. Lamers  
*Management / Office Assistant*

Drs. A.J. Middendorp  
*Management / Office Assistant (until June)*

S. Morabbi, MSc

*Management / Office Assistant (starting July)*

J. van Rooijen

*Finances and data management Officer*

Drs. A. Schouten-Voskamp

*Project coordinator & Executive Assistant Scientific Director*

N. Turan-Koc

*Staff Member project administration*

S.C.J.W. Verhoeven

*Management / Office Assistant (until November)*

A. Vink

*Management / Office Assistant (starting November)*

## Education Office

---

Dr.ir. C.C. Anker

*Student Affairs Officer, Bachelor (December – July)*

R. Hölscher, MSc

*Student Affairs Officer, Master (until October)*

K. Nguyen, MSc

*Student Affairs Officer, Master (starting October)*

Prof. Dr. H.V.J. Linnartz

*Director of Education*

M.D. Olthof, MA

*Student Affairs Officer, Bachelor*

Drs. A.N.G. Pen-Oosthoek

*Head of Education Office*

R. Rashid, BSc

*Coordinator PR & Education*

W.C. Schrier, MSc

*Study Advisor*

L. van der Veld, BEd

*Administrative Support*

Dr. D.M. Smit-van Leusden

*Contactpunt VWO Coordinator*

## Computer Staff

---

Dr. E.R. Deul

*Manager Computer Group*

Dr.Ing. J.T. Intema

*IT-research / Education developer*

Dr. D.J. Jansen

*Scientific programmer*

E.J. v.d. Kraan

*ICT Staff member*

Dr. B.P. Venemans

*Deputy Head computer group*

A. Vos

*Programmer*

## Emeriti

---

Prof.dr. D. van Delft

Dr. A.M. van Genderen

Prof.dr. H.J. Habing

Prof.dr. V. Icke

Prof.dr. F.P. Israel

Prof.dr. W.J. Jaffe

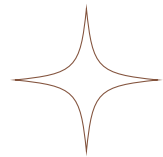
Drs. R.S. Le Poole

Dr. J. Lub

Prof.dr. G.K. Miley

Prof.dr. C.W.M. Fridlund

# OBSERVATORY MANAGEMENT



## Directorat

---

Drs. E. Gerstel  
*Institute Manager*

Prof.dr. H.V.J. Linnartz  
*Director of Education*

Prof.dr. H.J.A. Röttgering  
*Scientific Director (until August 15th)*

Prof.dr. I.A.G. Snellen  
*Scientific Director (starting August 16th)*

## Advisory Board

---

Dr. F. Eulderink

Prof.dr. I.M. de Pater

Prof. dr. S. Verduyn Lunel *(Chair)*

Dr. W. van der Zande

## Institute Council

---

Dr. A. Ahmadi

J. Braspenning, MSc

C. Dik BSc

Dr. S. Leslie

L. Lin, MSc

W. Mulder, MSc

J. van Rooijen

Dr. B. Venemans

Prof.dr. S. Viti *(Chair)*

## Scientific Council

---

Dr. R.J. Bouwens

Prof.dr. B.R. Brandl

Dr. A.G.A. Brown

Dr. L.H. Burtscher

Dr. M. Cautun

Dr. K. Chuang

Dr. M.P. van Daalen

Prof.dr. E.F. van Dishoeck

Prof.dr. M. Franx

Prof.dr. J.F. Hennawi

Dr. J.A. Hodge

Prof.dr. H. Hoekstra

Prof.dr. M.R. Hogerheijde

Prof.dr. C.U. Keller

Dr. M.A. Kenworthy

Prof.dr. M.T. Kriek

Prof.dr. K.H. Kuijken

Dr. A.L.M. Lamberts

Prof.dr. H.V.J. Linnartz

Prof.dr. F.H. van Lunteren

Dr. N. van der Marel

Dr. M.K. McClure

Dr. Y. Miguel

Dr. A. Monreal Ibero

Prof.dr. S.F. Portegies Zwart

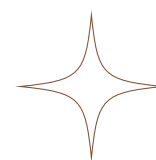
Dr. E.M. Rossi



Prof.dr. H.J.A. Rottgering  
Dr. P.M. Rodrigues Dos Santos Russo  
Dr. M. Schaller  
Prof.dr. J. Schaye  
Dr. E. Sellentin  
Prof.dr. I.A.G. Snellen  
Dr.ir. F. Snik  
Dr. T. Stolker

Dr. R. Stuik  
Prof.dr. A.G.G.M. Tielens  
Dr. S. van Velzen  
Dr. A. Vidotto  
Prof.dr. S. Viti  
Dr. R.J. van Weeren  
Prof.dr. P.P. van der Werf  
Prof.dr. P.T. de Zeeuw

# OBSERVATORY COMMITTEES



## MSc Admission Committee

---

Dr. M.P. van Daalen  
Prof.dr. K.H. Kuijken *(Chair)*  
Prof.dr. S.F. Portegies Zwart  
W. Schrier, MSc  
Prof.dr. S. Viti  
Prof.dr. P. van der Werf  
Dr. J.A. Hodge

## Msc Education Committee

---

C. Cordun, BSc  
J. Braspenning, MSc  
Dr. A. Vidotto  
Prof.dr. M. R. Hogerheijde *(Chair)*  
R. Buddhacharya, BSc  
Gijs Vermarien, BSc

## BSc Admission Committee

---

Prof.dr. M. Franx *(Chair)*  
Dr. A. Monreal Ibero  
Drs. A.N.G. Pen-Oosthoek  
Prof.dr. P.P. van der Werf

## BSc Education Committee

---

S. Beckers  
Dr. N. van der Marel  
Dr. A. Monreal Ibero  
Prof.dr. M. R. Hogerheijde *(Chair)*

N. Kempers  
L. Jansen  
R. Paaij  
Dr. S. van Velzen

Prof.dr. A. de Koter  
Prof.dr. I.A.G. Snellen *(Chair)*  
Prof.dr. M.T. Kriek

## Colloquium Committee

---

Dr. J.R. Callingham  
Prof. dr. M. Hogerheijde  
Prof.dr. H. Linnartz  
Dr. Y. Miguel  
Prof.dr. S.F. Portegies Zwart *(Chair)*  
Dr. E. Rossi  
Prof. dr. J. Schaye  
Dr. F. Snik  
Dr. R. van Weeren

## Public Interface Committee

---

C.P.A. van Buchem, MSc  
F.M. Derkink, MSc  
C. Groeneveld, MSc  
Prof.dr. H. Hoekstra *(Chair)*  
L.M. Stapper, MSc  
M.J.C. Wilhelm, MSc

## PhD Guidance Committee

---

Prof.dr. B. Brandl  
Dr. A.G.A Brown  
Dr. M.A. Kenworthy  
Prof.dr. K.H. Kuijken  
Prof.dr. S. Viti  
Prof.dr. P. van der Werf *(Co-chair)*  
Prof.dr. P.T. de Zeeuw *(Chair)*

## Old Observatory Instrument Committee

---

Dr. M. Kenworthy  
Prof.dr. S.M. Pompea  
Dr. P.M. Rodrigues Dos Santos Russo *(Chair)*  
Drs. S.E. van der Wal

## Board Of Examiners BSc and MSc

---

Prof.dr. B.R. Brandl  
Prof.dr. H Hoekstra *(Chair)*  
Dr. M.A. Kenworthy

## Computer Committee

---

Dr. R.J. Bouwens *(Chair)*  
Dr. M. Hogerheijde  
Prof.dr. S. Portegies Zwart  
Dr. M. Rybak  
Dr. M. Schaller  
Dr. A. Sonnenfeld  
Dr. R. Stuik  
F. Sweijen, MSc

## Mayo Greenberg Committee

---

Prof.dr. E.F. van Dishoeck  
Drs. E. Gerstel  
Prof.dr. H.V.J. Linnartz  
Prof.dr. G.K. Miley *(Chair)*

## Social Committee

---

C. Cheng, MSc  
M. Frias Castillo, MSc *(Chair)*  
C. Groeneveld, MSc  
Dr. M.A. Kenworthy  
R. Kugel, MSc  
I. van Leeuwen, MSc  
L. Rowland, MSc  
Dr. M. Schaller  
A. Vink

## Borrel Committee

---

J. Butterworth, MSc  
E. Kleisioti, MSc  
T.A. Stockmans, MSc  
N. Veronesi, MSc

## LEAPS Organisers

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Dr. A.R. Bemis  
Dr. R. Bhatwdekar (ESA)  
Dr. A.S. Booth  
Dr. H. Ye

## Wellbeing Committee

---

Dr. J.R. Callingham  
Drs. E. Gerstel  
Dr. S.K. Leslie  
Dr. Y. Miguel *(Chair)*  
E. Osinga, MSc  
W.C. Schrier, MSc  
Dr. H. Ye  
Dr.ir. F. Snik

## PhD Application Round Coordination

---

Dr. R.J. Bouwens

## Equity, Diversity and Inclusion (EDI) Committee

---

Dr. A. Ahmadi  
Dr. A. Bemis  
Dr. A.Y. Kesseli  
D. Klindzic, MSc  
Drs. E. Gerstel  
Dr. J.A. Hodge  
Dr. J.R. Callingham  
K.M. Butler, MSc  
Dr. M.A. Kenworthy  
M. McCabe, MSc  
Dr. P.R. Rodrigues dos Santos Russo  
S. Panchagnula, MSc *(Chair)*  
S.L. Ahad, MSc  
W. Mulder, MSc

## Sustainability Committee

---

S.L. Ahad, MSc

Dr. L. Burtscher *(Co-chair)*

Dr. V. Impellizzeri

*(Co-chair)*

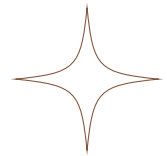
A.J. Louca, MSc

Prof. dr. S.F. Portegies Zwart

Dr. Z. Penoyre

Dr. M.M.E. Bouvier

# NOVA



## NOVA Office

---

F. van Brenk  
*Financial Controller*

Drs. J.C. Liesting-de Kok  
*Management Assistant*

H. Olgun  
*Financial Administrator*

Dr.ir. M. Rodenhuis  
*Executive Director*

Dr. R. Stark  
*Senior Strategic Advisor*

Dr. T.P.G. Wijnen  
*Instrumentation Coordinator*

## METIS Project Office

---

Ir. F.C.M. Bettonvil  
*Consortium Manager METIS*

Dr. L.H. Burtscher  
*Calibration Scientist METIS*

J.W. van der Geest  
*Consortium financial Manager METIS*

C. Salo  
*Deputy systems Engineer METIS*

Dr. R. Stuik  
*METIS AIV System Lead*

Ir. D. Dolkens  
*Optical Engineer (Guest)*

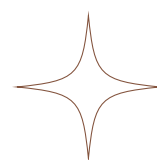
F. Fazel Hesar  
*Guest*

A. Koops  
*Configuration Manager (Guest)*

Ir. S. Kwast  
*Product Assurance Manager METIS (Guest)*

Ing. D.J. Lesman  
*Instrument Engineer (Guest)*

Dr. J.A. Lynn  
*Project Manager (Guest)*



# SCIENCE POLICY FUNCTIONS AND UNIVERSITY COMMITTEE MEMBERSHIPS

## Dr. R.J. Bouwens

---

Observatory Computer Committee	<i>Chair</i>
Leiden Observatory PhD Call	<i>Coordinator</i>
OU-NIR in the Euclid Science Ground Segment	<i>Deputy Lead</i>
REBELS team	<i>PI</i>
MUSE GTO team	<i>co-I</i>
FRESCO team	<i>co-I</i>

## Dr. A.G.A. Brown

---

Gaia Data Processing and Analysis Consortium	<i>Chair</i>
Gaia Science Team	<i>Member</i>
NOVA Instrument Steering Committee	<i>Member</i>
Steering Committee IAU Division A	<i>Member</i>
Gaia/Netherlands	<i>Principal Investigator</i>
Faculty Council	<i>Member</i>

## Prof.dr. B.R. Brandl

---

JWST-MIRI	<i>Deputy Co-PI</i>
ESO Contactcommissie	<i>Member</i>

ESO ELT Project Science Team	<i>Member</i>
Sterrewacht Scientific Council	<i>Member</i>
ELT-METIS project	<i>PI</i>
Board of Examiners	<i>Deputy Chair</i>

## Dr. L. Burtscher

---

EAS sustainability committee	<i>Co-chair</i>
METIS calibration working group	<i>Lead</i>
Astronomers for Planet Earth operations group	<i>Member</i>
GATOS collaboration	<i>Member</i>
LLAMA collaboration	<i>Member</i>
MATISSE science group	<i>Member</i>
METIS science group	<i>Member</i>
Review board, Office of Astronomy for Development	<i>Member</i>
RvdA sustainability committee	<i>Member</i>
METIS science team	<i>Theme Lead AGN</i>

## Dr. M. Van Daalen

---

Curriculum Evaluation Committee	<i>Chair</i>
MSc admission committee	<i>Member</i>

YAL interdisciplinarity group	<i>Member</i>
YAL policy group	<i>Member</i>
Young Academy Leiden	<i>Member</i>

## Prof.dr. E.F. van Dishoeck

---

Annual Reviews of Astronomy & Astrophysics	<i>Co-Editor</i>
European JWST-MIRI consortium	<i>Co-PI</i>
NWO Permanente Commissie Grootchalige Wetenschappelijke Infrastructuur	<i>Member</i>
Raad van de Astronomie	<i>Member</i>
Steering committee NCCR PlanetS Switzerland	<i>Member</i>

## Prof.dr. M. Franx

---

Ultravista Survey	<i>Co-PI</i>
Leids Kerkhoven Bosscha Fonds	<i>Director</i>
KNAW	<i>Member</i>
Lega-C team	<i>Member</i>
MUSE Science Team	<i>Member</i>
NIRSPEC/JWST Instrument Science Team	<i>Member</i>
Nova Research Committee	<i>Member</i>
Wetenschappelijke Raad	<i>Chair</i>
Leids Sterrewacht Fonds	<i>Chair Board of Directors</i>
Oort Fonds	<i>Chair Board of Directors</i>

## Prof.dr. M.R. Hogerheijde

---

European ALMA Regional Center Coordinating Committee	<i>Member</i>
Education Committee Astronomy BSc	<i>Chair</i>

Netherlands Radio Astronomy Advisory Committee	<i>Member</i>
NOVA Submillimeter Strategy Committee	<i>Member</i>
Allegro, European ALMA Regional Center node in the Netherlands	<i>Program Director</i>
MATISSE Science Group	<i>Member</i>
Education Committee Astronomy MSc	<i>Chair</i>

## Dr. J.A. Hodge

---

SOC EAS 2022 symposium "The interstellar medium of infrared galaxies"	<i>Member</i>
AtLAST collaboration	<i>Member</i>
SKA Extragalactic Spectral line working group	<i>Member</i>
Next Generation Very Large Array (ngVLA) High-redshift Universe working group	<i>Member</i>
Academy of Finland Astronomy Review Panel	<i>Member</i>
SOC "Extreme galaxies in their extreme environments at extremely early epochs"	<i>Member</i>

## Prof.dr. H. Hoekstra

---

Euclid Cosmology Science	<i>Coordinator</i>
NOVA network 1	<i>Coordinator</i>
Athena Mission	<i>Member</i>
Euclid Consortium Coordination Group	<i>Member</i>
Euclid Consortium Editorial Board	<i>Member</i>
LISF	<i>Member</i>

## Prof.dr. V. Icke

---

Gorlaeus Building Art Committee	<i>Member</i>
---------------------------------	---------------

Advisory Board of  
CAMRAS (Dwingeloo) *Member*

Advisory Board of the Institute  
for Interdisciplinary Studies  
(University of Amsterdam) *Member*

Board of Editors of the Nederlands  
Tijdschrift voor Natuurkunde *Member*

---

## Dr. C.M.V. Impellizzeri

---

SOC Lorentz Workshop "The high  
frequency ALMA Universe" *Chair*

Leiden Sustainability Committee *Co-Chair*

ALMA Regional Center  
coordination committee *Member*

Event Horizon Telescope  
Collaboration *Member*

Event Horizon Telescope  
Science Council *Member*

I-HOW: IAU Hands-On Workshop *Member*

SOC for radio interferometry  
school (Turkey) *Member*

SOC Torus Meeting *Member*

NRAO time allocation committee *Member  
of the Panel*

NWO Open Competition  
Domain Science – M *Member  
of the Panel*

---

## Prof.dr. F.P. Israel

---

NWO Top-1 Panel Chair *Chair*

Skepsis Foundation *Chair*

Nationale Wetenschaps  
Agenda (NWA-ORC) *Member*

Mid-term review-commissie  
onderwijs Natuur – en  
Sterrenkunde *Member*

---

## Prof.dr. W.J. Jaffe

---

European Interferometry Initiative *Dutch  
Member*

IAU FITS working group *Member*

Various IAU scientific committees *Member*

MATISSE Project *Scientist*

---

## Prof.dr. J.S. Kaastra

---

Athena science working  
group WHIM *Chair*

Science team Arcus *Senior advisor*

Athena XSAT team *Member*

Editorial board, Astrophysics  
& Space Science *Member*

SOC X-ray Universe 2023 *Member*

XRISM Science team *Member*

Chandra Low Energy Transmission  
Grating Spectrometer (NASA) *PI*

XMM-Newton Reflection  
Grating Spectrometer (ESA) *PI*

XRISM Atomic data team *Vice-Chair*

---

## Dr. M.A. Kenworthy

---

"In the Spirit of Lyot" Direct  
imaging exoplanet conference *Chair of  
Science  
Organising  
Committee*

High Contrast Imaging for METIS *Deputy Co-I*

Coronagraph design for ERIS *Lead*

Leiden Delft Erasmus  
Space Missions Minor *Leiden  
Coordinator*

"In the Spirit of Lyot" Direct  
imaging exoplanet conference *Member of  
the Local  
Organising  
Committee*

bRing Project *Principal  
Investigator*

ALMA TAC *Reviewer*

ESO TAC	<i>Reviewer</i>	Programme Board Tsinghua-Leiden joint astronomy programme	<i>Co-chair</i>
JWST Cycle 1 TAC	<i>Reviewer</i>	Latin America/Caribbean Region Group	<i>Member</i>
LCOGT TAC	<i>Reviewer</i>		
3rd Junior Research Assembly for PlanetS/Switzerland	<i>Workshop on "Writing a professional webpage for Early Career Researchers"</i>		

Examencommissie *Member*

### Prof.dr. M.T. Kriek

---

JWST/AURORA survey	<i>Co-I</i>
JWST/UNCOVER Survey	<i>Co-I</i>
MOSDEF Survey	<i>Co-PI</i>
Christiaan Huygensprijs Jury	<i>Member</i>
NWO-ENW Vidi Selection Committee	<i>Member</i>
Heavy Metal Survey	<i>PI</i>
Astronomy Board of Examiners	<i>Member</i>
Leiden Observatory Staff Retreat Committee	<i>Member</i>
Leiden Observatory Strategy Committee	<i>Member</i>
LUF Commissie voor Wetenschappelijke Bestedingen	<i>Member</i>
Oort Fellowship Selection Committee	<i>Member</i>
SRON-Leiden Observatory Social Committee	<i>Member</i>

### Prof.dr. K.H. Kuijken

---

Strategic Plan Dutch Astronomy 2021-2030+	<i>Co-editor</i>
ASTRON Institute Advisory Committee	<i>Member</i>
Fachbeirat Max Planck Institute for Extraterrestrial Physics	<i>Member</i>

### Dr. A.L.M. Lamberts

---

KNCV CTC section PhD+ seminars *Board Member*

Researchers in Science for Equality *Junior Board member*

### Prof.dr. H.J. van Langevelde

---

Event Horizon Telescop	<i>Director</i>
National Radio Astronomy Advisory Committee	<i>Member</i>
SKA Science Focus Group on VLBI	<i>Member</i>
SKA Science Working Group "The Galaxy"	<i>Member</i>
SKA Science Working Group, Cradle of Live	<i>Member</i>
Board EC project RadioBlocks	<i>Representative</i>
Raad van de Astronomie	<i>Secretary</i>
Studium Generale-commissie Universiteit Leiden	<i>Member</i>

### Prof.dr. H. Linnartz

---

INTERCAT (Interstellar Catalysis)	<i>PI</i>
ICE AGE – JWST ERS DD program	<i>Co-PI</i>
SOC "Molecular high resolution spectroscopy symposium"	<i>Member</i>
SOC ECLA (European Conference on Laboratory Astrophysics)	<i>Member</i>
LOC ECLA2025	<i>Chair</i>
Dutch Astrochemistry Network (III)	<i>Member</i>



EDIBLES (Diffuse Interstellar Band consortium) *Member*

Holland Research School for Molecular Chemistry *Member*

Board of directors of education *Member*

LOCNOC (coordination education between Dutch astronomical institutes) *Member*

## Prof.dr. F.H. van Lunteren

---

History of Science Society *Member*

Descartes Centre Utrecht *Member*

Gastschrijvercommissie Universiteit Leiden *Member*

Historisch Genootschap Amsterdam *Member*

Koninklijk Nederlands Historisch Genootschap *Member*

Koninklijke Hollandse Maatschappij van Wetenschappen *Member*

Redactie Nederlands Tijdschrift voor Natuurkunde *Member*

Studium Generale-commissie Universiteit Leiden *Member*

Teylers Tweede Genootschap *Member*

Wetenschappelijke Raad Museum Boerhaave *Member*

Wetenschappelijke Raad Scaliger Instituut *Member*

Wetenschapscommissie Teylers Museum *Member*

Woensdagavond Gezelschap Utrecht *Member*

## Dr. N. van der Marel

---

Opleidingscommissie Sterrenkunde *Docentlid*

Promotie begeleidingscommissie *Member*

## Dr. M.K. McClure

---

NASA SPICE IR Probe mission concept science team *Member (protoplanetary disk working group)*

DAN-III *Organizing Committee Member*

JWST ERS Ice Age team *Principle Investigator*

JWST It's COMplicated team *Principle Investigator*

JWST MIDAS team *Principle Investigator*

Colloquium committee *Member*

## Dr. Y. Miguel

---

Ariel mission *Co-PI*

Atmospheric Chemistry working group of the ARIEL mission *Chair*

Juno mission science team *Member*

Plato mission science team *Member*

LIFE space mission concept *Member*

Young Academy Leiden *Member*

Outreach committee at the Young Academy Leiden *Member*

Policy group of the Young Academy Leiden *Member*

Core team for the development of the Strategic Plane of the Faculty of Science *Member*

Observatory Wellbeing committee *Chair*

## Dr. A. Monreal Ibero

---

Opleidingscommissie Sterrenkunde BSc *Member*

Toelatingscommissie Sterrenkunde BSc *Member*

## Prof.dr. G.K. Miley

---

Greenberg Foundation	<i>Chair</i>
IAU European Regional Office of Astronomy for Development	<i>Co-Chair</i>
Raad van Toezicht Stichting LOFAR	<i>Member</i>
IAU North American Regional Office of Astronomy for Development	<i>Member, Advisory Board</i>
Governing Council, Associated Universities Inc.	<i>Trustee</i>

## Prof.dr. S.F. Portegies Zwart

---

MSc admission committee	<i>Member</i>
Prieneke van Hoeve committee	<i>Chair</i>
Leiden University Library committee	<i>Member</i>
Colloquium organizing committee	<i>Chair</i>

## Dr. E.M. Rossi

---

LISA Science Group in the LISA Consortium	<i>Chair</i>
LISA NL group, within the LISA Consortium	<i>Chair</i>
CAN (committee for astroparticle physics in the Netherlands)	<i>Member</i>
SRON Scientific Advisory Committee	<i>Member</i>

## Prof.dr. H.J.A. Rottgering

---

Board of the Netherlands Research School for Astronomy	<i>Chair</i>
Advisory board Delft University Space Institute	<i>Member</i>
Board LOFAR International Telescope	<i>Member</i>

Euclid Consortium Board	<i>Member</i>
Netherlands Committee for Astronomy	<i>Member</i>
NL-SKA contact committee	<i>Member</i>
LOFAR surveys: Opening up a new window on the Universe	<i>PI</i>

## Dr. P. Russo

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ECSITE Programme Committee	<i>Member</i>
IAU Division C	<i>Member</i>
NSO EU Horizon Europe Space Programme	<i>Member</i>
Ethics Committee	<i>Member</i>
Open Science	<i>Member</i>

## Prof.dr. J. Schaye

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MUSE QuBES (Quasar Blind Emitter Survey)	<i>PI</i>
MUSE GTO team	<i>Builder</i>
Athena X-IFU	<i>Co-I</i>
LOFAR Epoch of Reionization science team	<i>Member</i>
Athena X-IFU science advisory team	<i>Member</i>
Board, Pastoor Schmeits prize	<i>Member</i>
Consortium board ITN BiD4BEST	<i>Member</i>
EUCLID cosmological simulations working group	<i>Member</i>
WEAVE QSO science team	<i>Member</i>
SOC Virgo Consortium for cosmological supercomputer simulations	<i>Member</i>
SOC "The epoch of galaxy quenching"	<i>Member</i>
WeCO (Permanent committee for academic practice of the faculty of science)	<i>Member</i>

WT8 fellowship panel Research Foundation Flanders (FWO)	<i>Member</i>
Pastoor Schmeits prize	<i>Member</i>
Stichting Studiefonds J.C. Kapteyn	<i>Member</i>
MUSE (Multi Unit Spectroscopic Explorer)	<i>Member</i>
Virgo Consortium for cosmological supercomputer simulations	<i>Member</i>

### Prof.dr. I.A.G. Snellen

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Koninklijke Nederlandse Astronomen Club	<i>Board Member</i>
NWO Astronomie Tafel	<i>Chair</i>
NOVA Network 2	<i>Coordinator</i>
ERC Starting Grant Committee	<i>Member</i>
METIS Science Team	<i>Member</i>
NOVA Board	<i>Member</i>
NWA Origins Center	<i>Member</i>

### Dr. R. Stuik

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JHOF	<i>Secretary</i>
LKBF	<i>Secretary</i>
LSF	<i>Secretary</i>

### Dr. T. Stolker

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Curriculum Evaluation Committee	<i>Member</i>
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### Prof.dr. A.G.G.M. Tielens

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AstroPAH	<i>Editor in Chief</i>
KNAW	<i>Member</i>

### Dr. S. van Velzen

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Rubin Observatory in-kind program	<i>Advisory Role</i>
Opleidingscommissie (OC)	<i>Member</i>

### Dr. A. Vidotto

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Lorentz Centre Workshop "Life Around a Radio Star"	<i>Co-coordinator</i>
NOVA Network 2	<i>Deputy Coordinator</i>
IAU commission F2 "Exoplanets and the Solar system"	<i>Elected Member</i>
Ariel Working Groups "Upper Atmospheres" and "Stellar Activity"	<i>Member</i>
Athena mission topical panel "SWG 3.1 Solar system and exoplanets"	<i>Member</i>
Bcool consortium	<i>Member of the Steering Committee</i>
NASA Exoplanet Research Program (2022)	<i>Panel member</i>
TAC Guest Observer ESA mission	<i>Panel member</i>
CUTE (Colorado Ultraviolet Transit Experiment) cubesat	<i>Science Team Member</i>
IAU Symposium 370 "Winds of stars and Exoplanets", Busan, South Korea	<i>SOC chair</i>
Connecting solar and stellar coronal mass ejections, at 44th COSPAR Scientific Assembly	<i>SOC member</i>
Master Education Committee	<i>Member</i>
PBC	<i>member</i>

## Prof.dr. S. Viti

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ESO-ESAC	<i>Chair</i>
Editorial Board: Handbook of Astrochemistry (Elsevier)	<i>Member</i>
ESO-ASAC	<i>Member</i>
IAU Membership Committee	<i>Member</i>
MQAAAstro advisory board	<i>Member</i>
Scientific Advisory Board of the MPI for Radio Astronomy	<i>Member</i>
SOC ESO Disk and Planets Meeting	<i>Member</i>
SOC IAU Astrochemistry Symposium	<i>Member</i>
ESO-STC	<i>Member and Vice-chair</i>
AI Faculty Committee	<i>Member</i>
SAILS	<i>Member</i>
WeCo	<i>Member</i>

## Dr. R. van Weeren

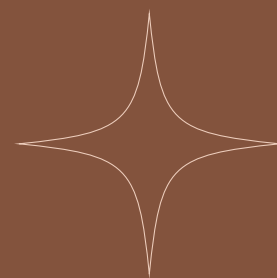
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LOFAR DUPPLO Steering Panel	<i>Member</i>
Lorentz Center Science Board	<i>Member</i>
NL SKA Regional Community Council	<i>Member</i>
NWO tafel Astronomy	<i>Member</i>
MSc Astronomy Admission	<i>Member</i>

# GRANTS



# GRANTS 2022



P.I.	FUNDER	PROPOSAL TITLE	BUDGET (k€)
<b>Van Dishoeck</b>	Niels Bohr Prize	–	100
<b>Chuang</b>	NWO VENI	<i>A solid study of sulfur ice in space</i>	280
<b>Snellen</b>	NWO ISOTOPES	<i>Isotopes in exoplanet atmospheres: A new probe of their formation?</i>	301
<b>Kuijken e.a.</b>	NWO ENW-XL DUSC	<i>The Dark Universe Science Collaboration: Cosmology with the Euclid mission</i>	1604
<b>Snellen</b>	NWO Spinoza	–	2500
<b>Russo</b>	NWA Routes	<i>The evolution of amino acids in space, genes in the environment, and societal implications</i>	307
<b>Snik</b>	NWA Routes	<i>Bit by bit, or not at all</i>	95
<b>Kenworthy</b>	NWO-M2	<i>Understanding the formation pathways for exoplanets far from their parents stars</i>	575
<b>Miguel</b>	NWO-GO	<i>The next generation of interior models for giants planets</i>	317
<b>Russo</b>	International Day of Light 2023	<i>International Day of Light 2023</i>	20
<b>Linnartz</b>	ASML-collaboration	<i>Radiation based tools for (sub)ML desorption</i>	238
<b>Sundararajan</b>	EU MSCA-PF-EF	<i>The role of pentagons in the conversion of Polycyclic Aromatic Hydrocarbons into fullerenes in the interstellar space</i>	188
<b>Hoekstra</b>	ERC Advanced	<i>Observational Cosmology Using Large Imaging Surveys</i>	2458
<b>Brown</b>	EU MWGaiaDN	<i>MWGaiaDN: Revealing the Milky Way with Gaia</i>	456
<b>Schaye</b>	EU MSCA-RISE-Lacegal	<i>Latin American Chinese European Galaxy Formation Network</i>	184
<b>Van Langevelde</b>	EU RADIOBLOCKS	<i>New science in Radio Astronomy: Applying cutting-edge technology to enhance the entire data chain, from receiver to final output</i>	100
<b>Brown</b>	NWO Spinoza Helmi: collaboration	–	97



## PUBLISHER:

Leiden Observatory, Leiden University

## EDITORS:

Ronald Stark, Robin Hölscher

## DESIGN:

Aneta Margraf-Druc

[www.universiteitleiden.nl/en/science/astronomy](http://www.universiteitleiden.nl/en/science/astronomy)



Universiteit  
Leiden  
The Netherlands

# Research Institute Leiden Observatory

Onderzoeksinstituut Sterrewacht Leiden



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