Propositions accompanying the thesis

The puzzle of protoplanetary disk masses

i. CO isotope-selective photodissociation needs to be properly considered in disk modeling to infer accurate gas masses. *(Chapter 2)*

ii. Disk gas masses can be inferred by a combination of ^{13}CO and C^{18}O total intensities, although with some uncertainties. *(Chapter 3)*

iii. Fast chemical evolution rather than low gas-to-dust ratios is likely the cause of the low CO-based disk gas masses in Lupus. *(Chapter 4)*

iv. The slope of the surface density distribution can be traced by low-J ^{13}CO line emission, but only in specific disk regions. *(Chapter 5)*

v. HD far-infrared emission lines from disks should be considered as an important science goal for future far-infrared missions.

vi. The existence of Jupiter and its particular orbit make that the Solar System is not a typical case compared with observed exoplanetary system architectures.
(Morbidelli & Raymond 2016, Geophys. Res., 121, 1962)

vii. Running models teaches you that extraordinary claims require extraordinary causes, as well as an extraordinary high number of checks.

viii. Studying CO isotopologues is often considered as complicated chemistry by astronomers, but it does not even fall under "chemistry" for astrochemists.

ix. Finding the unexpected in a dataset can be as exciting as finding the confirmation of what was expected.

x. In life, as in science, an error can be an opportunity to learn something new.

xi. Combining motherhood with a PhD is often seen as a heroic act: this demonstrates that not enough has yet been done for true inclusion of women in science.

xii. All astronomers should stare at the sky on a new moon night in Paranal at least once in their lifetime. This brings back the original astonishment in front of the beautiful unknown and provides renewed motivation to study a single detail as part of the bigger picture.

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