Propositions accompanying the thesis

Monsters in the Deep: Using simulations to understand the excess baryonic mass in the centres of high-mass, early-type galaxies

1. Galaxies with overmassive central black holes tend to have formed at high redshift and/or to have lost a large fraction of their stellar mass through tidal stripping. *(Chapter 2)*

2. Galaxy formation models in which the stellar initial mass function (IMF) varies with galaxy properties in accordance with observations of local, early-type galaxies are able to produce realistic galaxy populations. *(Chapter 3)*

3. The choice of IMF parameterization is extremely important when implementing IMF variations in galaxy formation models. *(Chapter 3)*

4. The excess mass-to-light ratio relative to that expected for a fixed reference IMF is not always a good measure of the IMF. *(Chapters 3 & 4)*

5. An IMF that varies at only the low-mass or high-mass end cannot simultaneously explain observations of early- and late-type galaxies. *(Chapters 3 & 5)*

6. Radial IMF gradients within individual galaxies are a natural outcome of models which reproduce the observed trends of IMF with galaxy velocity dispersion. *(Chapter 5)*

7. When inferring IMF variations spectroscopically, one should only vary the part of the IMF to which one's data are sensitive.

8. Hiding differences between observations and the predictions of simulations is lazy, dangerous, and only gives the chance of scientific discovery to someone else.

9. Fear-based motivation too often replaces curiosity in PhD studies due to a system that accepts extreme stress as a "normal" part of the job.

10. Acknowledging and understanding one's own implicit bias is the first step toward correcting it.

11. Effective communication between a supervisor and student is the cornerstone of a happy PhD.

12. Physical exercise and meditation are some of the best methods of relieving stress and insomnia.

13. Bananas are an excellent source of potassium, fibre, and office bonding.

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