

# Untangling cosmic collisions: a study of particle acceleration and magnetic fields in merging galaxy clusters

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## **Propositions**

accompanying the dissertation

#### **Untangling Cosmic Collisions**

A study of particle acceleration and magnetic fields in merging galaxy clusters

by

### Erik Osinga

- 1. The jets of active galactic nuclei are not significantly aligned in their orientation across large scales in the Universe (Chapter 2).
- 2. Low-mass galaxy clusters can also host radio halos (Chapter 3).
- 3. It is possible to construct high-quality images using the longest wavelength radiation that can pass through the Earth's ionosphere (Chapter 4).
- 4. The intracluster medium significantly depolarises background radio sources, and this effect can be used to infer the magnetic field properties of the medium (Chapter 5).
- 5. Faraday rotation and depolarisation are subject to different observational biases and combining both techniques gives a more complete picture of cosmic magnetic fields (Chapter 6).
- 6. Requiring authors to also publish their data and analysis techniques would greatly increase research productivity.
- 7. Cosmic magnetogenesis is one of the big astrophysical mysteries that will be clarified in my lifetime.
- 8. One of the positive aspects of the COVID-19 pandemic is the fast upsurge in the availability of live recordings, which will accelerate the training of experts.
- 9. Focus should not rest on the occurrence of an error in a project, but on the magnitude of its impact.
- 10. A good supervisor is as important as a good PhD candidate.
- 11. It is better to overestimate yourself than to underestimate yourself.
- 12. There was a different proposition here before, but it was worse than this one.

Erik Osinga Leiden, November 2023