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Merging galaxy clusters: probing magnetism and particle acceleration over cosmic time

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Propositions accompanying the thesis

Merging Galaxy Clusters: probing magnetism and particle acceleration over cosmic time

1. Radio relics challenge our understanding of magnetic fields and particle acceleration in cluster outskirts (Chapters 2, 3, 5).
2. Deep X-ray observations are necessary, although not always sufficient, to unveil the properties of merger-induced shocks (Chapter 3).
3. Following the evolution of cosmic magnetism requires high-resolution low-frequency observations (Chapters 4, 6).
4. To understand the physics of shock acceleration, the polarimetric information cannot be ignored (Chapter 5).
5. High-frequency follow up observations of low-frequency samples is the least biased way to uncover the population of ultra-steep spectra radio halos (Chapter 6).
6. To explain diffuse radio emission we need to understand particle acceleration as well as magnetic field amplification. This can be achieved only with the synergy of radio and X-ray facilities.
7. The evolution of cosmic magnetism will remain a mystery for a long time.
8. Theories should be modelled on data, and not vice versa.
9. In a world full of toxic positivity, we have the duty to allow the expression of fear, grief, disappointment and stress.
10. Having proper vacation time is a right. Taking proper vacation time is a duty.
11. Sharing scientific results on social media should be handled only by dedicated people, and only after the author's approval.
12. Never underestimate the power of a basketball court, after-game fries and beers, out-of-tune karaoke and bad dancing.
13. It takes time, and a village, to make something good.

Gabriella Di Gennaro
Leiden, July 2021