When galaxy clusters collide : the impact of merger shocks on cluster gas and galaxy evolution

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Propositions

accompanying the thesis

When Galaxy Clusters Collide: the impact of merger shocks on cluster gas and galaxy evolution

1. The relics in the 'Sausage' cluster result from continuous acceleration of fresh electrons at twin shocks, followed by spectral ageing in the downstream area. *(Chapter 2)*

2. Spectral modelling of the 'Sausage' relic resolves the discrepancy between the radio-derived and the X-ray derived Mach number of the shock. *(Chapter 3)*

3. High frequency radio data, essential for constraining radio relic formation models, indicate that the currently adopted scenario is incomplete. *(Chapters 4 and 5)*

4. The passage of merger shocks triggers star formation in cluster galaxies. *(Chapters 6 and 7)*

5. The star-forming galaxies in the 'Sausage' cluster are massive, metal rich and show signatures of AGN and supernova outflows. *(Chapter 8)*

6. The star-forming galaxies in the 'Sausage' cluster are more gas rich than their field counterparts. *(Chapter 9)*

7. Large Hα surveys overcome cosmic variance and help constrain the bright end of the Hα luminosity function. *(Chapter 10)*

8. Upcoming low-frequency and high-frequency facilities will revolutionise our understanding of diffuse cluster emission.

9. Many astronomers struggle with impostor syndrome.

10. Specific day-time working hours should not be imposed in astronomy, which is, by definition, a night-time profession.

11. Proper programming and software design training would greatly enhance the productivity of astronomers.

12. Positive and negative feedback should come with specific examples, not just generalities.

13. Behind most successful people, there is a substantial amount of coffee.

14. Success consists of going from failure to failure without loss of enthusiasm (*Winston Churchill*). This is especially true for PhD students.

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