Propositions accompanying the thesis

The connection between mass and light in galaxy clusters

1. The galaxy cluster PLCK G004.5−19.5 is a new cluster merger at $z = 0.52$, which could provide new insights into the efficiency of diffuse radio emission production at high redshifts.

   (Chapter 2)

2. The potential of galaxy velocity dispersions as mass calibrators for precision cosmology is hampered by uncertain membership determination and the unknown level of accuracy of current hydrodynamical simulations.

   (Chapter 3)

3. The intrinsic alignments of cluster galaxies do not induce a significant bias in ongoing cosmic shear surveys.

   (Chapter 4)

4. Satellite galaxy-galaxy lensing can become a powerful new probe of the galaxy-halo connection.

   (Chapters 5 & 6)

5. One of the main aspects limiting the astrophysical interpretation of satellite galaxy-galaxy lensing measurements is the lack of precise theoretical predictions.

   (Chapter 6)

6. Cosmology is currently in the era of assessing systematic effects, and by definition this era will never end.

7. It will take much more than a 3σ discrepancy in $\Omega_{\rm m}$ and σ_8 to overthrow ΛCDM as the preferred cosmological model.

8. The field of intrinsic alignments benefits greatly from them being a nuisance for cosmic shear.

9. A prompt transition to open science—data, code, publications—should be a top priority within the scientific community.

10. The key to the success of humanity lies in a proper differentiation between science, pseudoscience and superstition.

11. Skepticism without curiosity is lame; curiosity without skepticism is blind.

12. It is true that travelling broadens our view of other cultures, but we should nevertheless be careful not to fall prey to cultural relativism.

13. Clear skies are not a requirement for cutting-edge astronomy. Nor is good weather for riding a bike.

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Leiden, September 2016