# SEAGLE- Simulating EAGle LEnses

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# Propositions

accompanying the dissertation

## SEAGLE– Simulating EAGLE LEnses

1. An end-to-end simulation and modeling pipeline of mock lenses, using state-of-the-art cosmological simulations, is essential to test galaxy formation models using strong gravitational lensing. (**Chapter 2**)

2. Directly comparing lens mass models of real lenses with the results from numerical simulations, without accounting for the lensing and observational effects, can lead to biased results. (**Chapter 2**)

3. The mass-size and density-slope distributions of massive luminous red galaxy (LRG) lenses require milder stellar and AGN feedback than is inferred from volume-limited samples of massive galaxies. (**Chapter 3,4**)

4. The dark matter fractions within half of the effective radius of lens galaxies can put any galaxy-formation simulations to test when comparing them with strong lensing observations. (**Chapter 4**)

5. Proper Initial Mass Function (IMF) modeling holds an important key for realistic $\Lambda$CDM simulations. (**Chapter 5**)

6. A steeping of the stellar IMF slope towards the centers of galaxies might mimic dark-matter cusps. (**Chapter 3, 4, 5**)

7. There are no accidents/serendipity in life. The chain of events is what it was meant to be. Only our ignorance keeps the illusion of accident/serendipity.

8. Being the lead author of any paper bestows an important responsibility on the person both scientifically and academically.

9. Names should be withheld from the review committee for a fair judgment of proposals.

10. Cosmological simulations and cooking have striking similarities. Changing the ingredients can lead to surprising result whether it be a galaxy or a biryani.

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