

# Deciphering the Cosmic Code for Galaxy Formation:

## Discussion

Simon White

Max Planck Institute for Astrophysics

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it is an (ongoing) process

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Galaxies form through cooling and condensation of gas at the centres of an evolving population of dark matter halos; these grow under the action of gravity from low-amplitude fluctuations in the early universe.

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**BUT**

- \* Galaxies and their formation processes are complex
  - Many aspects are at best schematically understood

# Discussion questions?

1. Will galaxy studies test  $\Lambda$ CDM? (Do/should we care?)
2. Should we care about (can we model)  $B$ -fields and cosmic rays?
3. Is the star formation process (and the IMF) universal? Why?
4. How do we model the formation of seed black holes?
5. How do we model feedback in order to avoid resolution issues?
6. Can the “physics” model of hi- $z$  simulations make low- $z$  galaxies?
7. Do we really care about primordial black holes?
8. Does environment beyond a galaxy’s halo affect its evolution?
9. Why is no one working on spiral structure?
10. Do simulations put heavy elements in the right places?
11. Do we understand how mergers relate to AGN, SM gals, etc?
12. How good are low- $z$  “analogues” of high  $z$  galaxies?
13. How will large simulation codes be written in the future?