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## Early Structure Formation in LPBH Cosmologies

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Primordial black holes (PBH) comprising some fraction of the Universe's dark matter is a potentially interesting alternative to the more standard particle based dark matter. If the fraction is large, PBHs can significantly alter how and when nonlinear structures develop. If it is small, they could provide potentially interesting constraints on WIMPs and/or seed the super massive black holes known to exist by redshift  $\sim 7$ . We have run LPBH cosmological simulations of structure formation starting from deep in the radiation era and ending at  $z=100$ . We analyze the clustering, structure and mass function of halos in the simulation, as well as typical PBH velocities relevant for CMB constraints. Future use cases include tidal perturbations on primordial PBH binaries and whether the formation of stars differs in this scenario.

**Primary author:** BEATTIE INMAN, Derek

**Co-author:** ALI-HAIMOUD, Yacine (New York University)

**Presenter:** BEATTIE INMAN, Derek

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