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Large-Scale Correlated Magnetic Fields from Primordial Seeds

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The origin of large scale magnetic fields in the Universe is widely thought to be from early Universe processes, like inflation or phase transitions. These magnetic fields evolve via magnetohydrodynamic processes till the epoch of recombination. When structures begin to form in the later Universe, the conservation of magnetic flux amplifies the magnetic fields via the adiabatic collapse of gravitationally bound gas clouds hosting the magnetic fields, and moves them to smaller scales. In this work, we have semi-analytically studied this forward cascade effect, considering simple models of gravitational collapse of structures. We find that this simple model is able to reproduce the general qualitative features of the evolution of the magnetic field spectrum as seen from magnetized cosmological simulations.

Mini Symposia (Invited Talks Only)

Plenary (Invited talks only)

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