

Cosmic Magnetism in Voids and Filaments



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A systematic study of cosmic magnetogenesis scenarios with SWIFT

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Numerical simulations can substantially support the study of the origin of cosmic magnetism. Simulation projects that simultaneously consider a plurality of seeding scenarios, resolve amplification processes and reach cosmological scales are however still somewhat scarce. Leveraging on algorithmic advances at the heart of the novel cosmological code SWIFT, and developing concurrently a suite of Modern Lagrangian Magnetohydrodynamical Solvers, each with a different formulation of Ideal Magnetohydrodynamics, we seek to make theoretical predictions for the large-scale structure of magnetic fields in the late-time universe for a variety of plausible magnetogenesis hypotheses, independent of biases introduced by the solver.

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