Tittle: Seeds for cosmic structure from Planckian discreteness

Abstract: I will present a model proposing a paradigm shift where inhomogeneities in the CMB are relics of the fundamental discreteness in the sense that they are actively produced by a quantum gravity mechanism instead of emerging from quantum fluctuations of the homogeneous vacuum state of the inflation.
The model generates a (approximately) scale invariant spectrum of (adiabatic) primordial perturbations with the correct amplitudes and red tilt without an inflaton. In the construction we assume the validity of the standard model up to close to the Planck scale. The process admits a semiclassical interpretation and avoids the trans-Planckian problem of standard inflationary scenarios based on the role of vacuum fluctuations. The deviations from scale invariance observed in the CMB are controlled by the self coupling constant of the Higgs scalar. The thermal production of primordial black holes can produce the amount of cold dark matter required by observations.
For natural initial conditions set at the Planck scale the amplitude and tilt of the power spectrum produced by the model fit the observations at the CMB and predict subleading corrections to the violation of scale invariance possibly measurable in the future.