Contribution ID: **67** Type: **Plenary/Parallel talk**

Primordial Black Holes from Multifield Inflation with Non-minimal Couplings

Friday 26 August 2022 14:00 (20 minutes)

Primordial Black Holes (PBHs), first postulated more than half a century ago, remain an active and fascinating area of research and provide an exciting prospect for accounting for Dark Matter. In this talk I will discuss the possibilities for production of PBHs near to Dark Matter mass scales from realistic multi-field inflation models that arise naturally from supergravity. These models fit neatly within the current status of inflationary models as constrained by CMB observations; they behave effectively as a single-field models for much of their evolution, and the isocurvature modes remain heavy throughout. Moreover, such models yield efficient post-inflation reheating with $N_{\rm reh} \sim O(1)$ e-folds after the end of inflation. I will demonstrate how our class of two-field models in particular give rise to inflationary dynamics that yield predictions for observables in close agreement with recent empirical data, such as the spectral index and ratio of power spectra for tensor to scalar perturbations. As has been noted in previous studies of PBH formation resulting from a period of ultra slow-roll inflation, we found that at least one dimensionless parameter must be fine-tuned, but I will show that we nonetheless find such models yield accurate predictions for a significant number of observable quantities using a smaller number of free parameters.

Authors: Prof. KAISER, David (MIT); MCDONOUGH, Evan; GELLER, Sarah (MIT); QIN, Wenzer (MIT)

Presenter: GELLER, Sarah (MIT)

Session Classification: Parallel Session Main Cupula: DM

Track Classification: Dark matter, neutrinos & astroparticle physics