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Supersymmetric Grand Unification at the Cosmological Collider

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Cosmological collider physics, a mechanism in which heavy particles produced during inflation leave an observable footprint in primordial non Gaussianities, carries the prospect of probing physics at scales far higher than any terrestrial collider. Supersymmetric grand unified theories (SUSY GUTs) are a highly motivated target, but the high unification scale is orders of magnitude above the reach of cosmological collider physics. We focus on the extra dimensional “orbifold” SUSY GUTs because they solve the doublet triplet splitting problem and suppress proton decay. Utilizing the “chemical potential” generalisation of cosmological collider physics to extend its reach, we show that the heavy gauge bosons from the GUT broken generators can produce signals potentially observable in large scale structure surveys and 21-cm cosmology.

Mini Symposia (Invited Talks Only)

Authors: BODAS, Arushi; BROADBERRY, Edward (University of Maryland, College Park); SUNDRUM, Raman

Presenter: BROADBERRY, Edward (University of Maryland, College Park)

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