



Contribution ID: 451

Type: **not specified**

Disorder: From Wires to Particle Production in Cosmology

Thursday, August 6, 2015 5:30 PM (20 minutes)

The early universe is likely filled with a large number of interacting fields with unknown interactions. How can we quantitatively understand particle production (for example, during inflation and reheating after inflation) when such fields undergo a sufficient number of non-adiabatic, non-perturbative interactions? Based on a precise mapping between particle production in cosmology to resistivity in disordered quasi one-dimensional wires, I provide a powerful statistical framework to resolve such seemingly intractable calculations. A number of phenomenon in disordered wires find an analogue in particle production. For example, Anderson localization in quasi one-dimensional wires can be directly mapped to exponential particle production in the early universe. Evolution equations as well as explicit solutions for the distributions of the number density of particles, along with possible applications will be provided.

Oral or Poster Presentation

Oral

Primary author: AMIN, Mustafa (University of Cambridge)

Presenter: AMIN, Mustafa (University of Cambridge)

Session Classification: AstroParticle, Cosmology, Dark Matter Searches, and CMB

Track Classification: Cosmology and Dark Matter Theory