Contribution ID: 58

Gravitational Neutrino Reheating : A minimal framework for reheating and leptogenesis

Monday 7 July 2025 13:50 (20 minutes)

Despite having important cosmological implications, the reheating phase is believed to play a crucial role in both cosmology and particle physics model building. Conventional reheating models primarily rely on arbitrary coupling between the inflaton and massless fields, which lacks robust predictions. In this talk, I will discuss our recently proposed novel reheating mechanism where the particle physics model, namely, the type-I seesaw model, is shown to play a major role in the entire reheating process, and the inflaton is assumed to be free from arbitrary coupling. To the best of our knowledge, this is the first reheating model of its kind that, besides being successful in resolving the well-known neutrino mass and baryon asymmetry problems, constrains a large class of inflation models, offers successful reheating and predicts a distinct primordial gravitational-wave spectrum and nonvanishing lowest active neutrino mass. Our novel mechanism opens up a new avenue of integrating particle physics and cosmology in the context of reheating.

Authors: Prof. MAITY, Debaprasad (IIT Guwahati); Dr HAQUE, MD. Riajul (ISI Kolkata); MONDAL, RAJESH (IIT Guwahati)

Presenter: MONDAL, RAJESH (IIT Guwahati)

Session Classification: Parallel 2