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Secondary Gravitational Waves as probes of the early Universe and Gravity

Tuesday 2 September 2025 11:00 (35 minutes)

In the new era of gravitational wave (GW) astronomy, we have access to a new window to investigate cosmology. In this talk, I am going to focus on the so-called scalar induced (stochastic) gravitational waves (SIGW) and how they can act as probes of the early Universe as well as the underlying gravitational theory itself. Specifically, the main results of my PhD thesis will be presented, which include: the GW signal from a population (gas) of primordial black holes (PBH) both in GR and f(R) theories of modified gravity and the GW phenomenology of some notable models of beyond standard model particle physics like (no-scale) supergravity and running vacuum models. Most significantly, some of these GW signals can lie within the detection bands of major future GW observatories like LISA and can be used to explain the PTA data.

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