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Leptogenesis from a First-Order Lepton-Number Breaking Phase Transition

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In this talk I will discuss a model in which the matter / anti-matter asymmetry of the universe is generated during a first order cosmological phase transition associated with the spontaneous breaking of lepton-number, which gives rise to the Majorana mass for heavy sterile neutrinos. The dynamics leading to lepton-number generation, namely CP-violating scattering at a bubble wall, are reminiscent of electroweak baryogenesis. However, the degrees of freedom (sterile neutrinos) and energy scale are typically associated with thermal leptogenesis. The model predicts a stochastic background of gravitational waves (as in EW baryogenesis), neutrinoless double beta decay (as in thermal leptogenesis), as well as a light pseudo-Goldstone Majoron, which may play the role of dark matter.

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