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Probing the Neutrino Mass Mechanism with the CMB

Thursday, 10 October 2019 11:00 (30 minutes)

A generic feature of many neutrino mass models is the prediction of a pseudo-Goldstone mode arising from the spontaneous symmetry breaking of lepton number. This new particle, the so-called majoron, can modify the evolution of the energy density of the Universe and damp neutrino perturbations around the time of recombination, leading to distinctive signatures in the CMB. I will show that current Planck data already probes neutrino couplings as small as ~1e-13, which if interpreted in the context of the type-I seesaw mechanism corresponds to lepton symmetry breaking scales on the order of ~100 GeV. I will further show that the presence of such a particle can assist in ameliorating the Hubble tension.

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