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TALK: Dark Radiation Isocurvature from Cosmological Phase Transitions

Monday, June 17, 2024 10:00 AM (45 minutes)

Speaker: Peizhi Du (Rutgers University)

Authors: Matthew Buckley, Peizhi Du, Nicolas Fernandez, Mitchell Weikert

Cosmological first-order phase transitions are typically associated with physics beyond the Standard Model, and thus of great theoretical and observational interest. In this talk, I will show that a broad class of non-thermal first-order phase transitions could generate distinct large-scale isocurvature in dark radiation that can be observable in the CMB. We derive constraints on ___ from phase transitions based on CMB+BAO data, which can be much stronger than that from adiabatic initial conditions. I will also demonstrate that since perturbations of dark radiation have a non-Gaussian origin, searches for non-Gaussianity in the CMB could also place a stringent bound on ___.

Presenter: DU, Peizhi (Rutgers University)