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Poster Session—Submission of Abstract

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Title of the Poster: Neff versus the lightest neutrino mass

Abstract Text: Within the framework of low-scale Type I seesaw models with two and three extra sterile neutrinos we evaluate the production of the sterile states in the Early Universe, assuming that they are produced only through non-resonant mixing with the active ones. We explore full parameter space and show that the bounds on the extra radiation coming from both BBN and CMB can severely restrict the mass spectra of the sterile neutrinos. In the model with two sterile neutrinos the mass range 1 eV-100 MeV is highly disfavoured, while in the model with three extra states this restrictions depend on the lightest active neutrino mass. We also studied the impact of the sterile neutrinos on the neutrinoless double beta decay.

Summary: Evolution of the Early Universe is highly sensitive to the sterile neutrinos with the mass below electroweak scale. Bounds on the extra radiation put severe constrains on the mass range 1 eV-100 MeV.