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Leptogenesis in the Scotogenic model

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In this talk we consider the scenario in which the Standard model is augmented by three generations of right-handed neutrinos and a scalar doublet. The newly introduced fields share an odd charge under a \mathbb{Z}_2 parity symmetry. We present a scenario in which the dark matter particle is at the keV-scale. Such particle is free from X-ray limits due to the unbroken parity symmetry that forbids the mixing between active and right-handed neutrinos. The active neutrino masses are radiatively generated from the new scalars and the two heavier right-handed states with $\sim \mathcal{O}(100)$ GeV masses. We demonstrate how these heavy fermions can also produce the observed baryon asymmetry of the Universe through the combination of Akhmedov-Rubakov-Smirnov mechanism and recently proposed scalar decays. We identify the parameter space where the successful leptogenesis is compatible with the observed abundance of dark matter as well as the measurements from the neutrino oscillation experiments.

Presenter: BRDAR, Vedran (MPIK Heidelberg)**Session Classification:** Baryogenesis