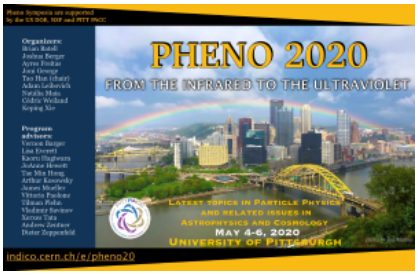

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Freez-In dark matter from secret neutrino interactions

Tuesday 5 May 2020 17:15 (15 minutes)

We study a simplified freeze-in dark matter model with a dark matter χ and a light scalar mediator ϕ which couples only to neutrinos in the Standard Model. We point out two possible UV origins generating extremely small scalar and pseudo-scalar couplings between ϕ and neutrinos. We find benchmarks to realize the correct relic density with and without re-annihilation scheme by solving the coupled differential equations for number and energy densities of ϕ and χ. We investigate the temperature evolution in the dark sector and the effect of decay and inverse decay of ϕ on BBN. We find tension in our simplified model between satisfying the cosmological constraint (relic abundance and BBN) and explaining the small scale structure problem with self-interacting dark matter argument.

Summary

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