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Leptophilic Z' model: Perturbative effects on the CMB spectrum

The introduction of right-handed chirality partners for neutrinos allows the calculation of deviations in the effective number of degrees of freedom in the early universe. The presence of these particles can be useful when proposing dark matter candidates. Moreover, the introduction of a new neutral interaction could explain the mechanism of thermalization of these new particles, while inducing a chiral anomaly free theory. We motivate a leptophilic to the μ and τ flavors Z' model with an even number of right-handed neutrinos; providing a useful and compatible model both in particle physics and cosmology. We study the perturbative effects of this model in the CMB spectrum, showing that deviations from the ΛCDM model are most important in the small-angle region. We also verify the consistency of this model in different beam dump experiments analyzing the production sensitivity for Z' boson and sterile neutrinos.

Mini-abstract

Sterile neutrinos framed in a leptophilic model induce perturbations evident in the CMB spectrum

Experiment/Collaboration

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