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Constraints on the dark matter interaction sector via extra radiation contributions

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Despite the observational evidences in favor of Dark Matter its nature is still a mystery. Theoretical realizations assume that dark matter is stable and is the lightest state within the dark sector (e.g. WIMPs). The dark sector can also contains even lighter states like dark bosons and fermions. However, those can be completely disconnected from the visible sector except by interaction with the dark matter. We focus our attention on these very-light dark particles and their contribution to the radiation budget of the Universe as dark radiation. We provide constraints on how large the dark matter sector can be depending on the dark matter freeze-out temperature and on the number of dark particles.

Summary

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