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Sterile neutrinos with secret interactions

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The motivation for new non-standard interactions in the sterile neutrino sector arises from the tension between oscillation data and cosmological data, indeed the former point towards the existence of one (or more) light sterile neutrino in the eV mass range, while the latter disfavor additional massive species with high statistical significance. However a partial thermalization induced by secret interactions can solve this tension, making eV sterile neutrinos fully consistent with big bang nucleosynthesis, cosmic microwave background and large scale structure measurements.
In this talk I will present a pseudoscalar model of secret interactions which provides a simple and elegant way of reconciling eV sterile neutrinos with precision cosmology. I will also mention how the hidden interactions can be extended to the dark matter sector and might mitigate the small scale problems of the standard cold dark matter paradigm.

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