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# Thermalisation of Light Sterile Neutrinos in the Early Universe

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## Abstract content

In recent years, both reactor neutrino experiments (Gallex, Sage,...)and short baseline oscillation experiments (MiniBooNE, LSND) have shown anomalies, which might be explained by a sterile neutrino with a mass difference squared of roughly 1eV^2.
Cosmology also seems to favour additional radiation, often dubbed Dark Radiation, and this radiation could also be explained by a sterile neutrino. However, the precise amount of Dark Radiation from a given sterile neutrino model depends on the thermalisation process in a non-trivial way. This is especially true in the presence of leptonic asymmetries.
We calculate the degree of thermalisation for a large mass/mixing parameter-space for both zero and large leptonic asymmetry L by solving the full Quantum Kinetic Equations. We find, that thermalisation in the best-fit point from the ground-based experiments is complete in the L=0 case, and about 12% in the L=0.01 case.

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