



EDITORIAL

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Editorial

Highlight Notes on “Do non-relativistic neutrinos constitute the dark matter?”

by Th. M. Nieuwenhuizen

Matter in the Universe seems to be made up to a large fraction of the so-called dark matter, the consistence of which is unknown. Searches for dark-matter particles have so far not been successful. The general belief is that they are Weakly Interacting and Massive Particles, the so-called WIMPs. The present paper uses the experimentally determined excess mass contrast of one particular cluster of galaxies (Abell 1689) fitting its radial dependence under the assumption of a thermal fermionic contribution. This yields an active fermionic mass $m = 1.45 \text{ eV}$ which is compared with different particle families and their cosmological evolution. Agreement is obtained for 3 non-relativistic massive-neutrino families which would constitute the cluster dark matter. Such massive non-relativistic neutrinos could indeed be cosmological, not causing contradiction with well-accepted cosmological evolutionary scenarios. They would condensate on the cluster at redshift $z \sim 28$ and would actively contribute to re-ionise the intracluster gas. This observation revives the previously abandoned neutrinos as viable dark-matter candidates at least for the Giant Cluster Abell 1689.

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