

INTERPRETATION OF THE XENON1T EXCESS IN THE DECAYING STERILE NEUTRINO MODEL

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The observed excess of electronic recoil events in the XENON1T experiment with energies from 1 to 7 keV [1] is considered in the framework of the phenomenological model with three active and three sterile neutrinos [2]. Assuming sterile neutrinos with appropriate masses in the several keVs domain to be decaying [3], it becomes possible to interpret the observed energy spectrum of electronic recoil events. Using this approach allows one to predict several peaks in the energy range of 1 - 7 keV for electronic recoil events owing to dark photons and photons emitted in this energy range [4, 5]. To study oscillations with decaying sterile neutrinos analytical expressions are obtained for transition and surviving probabilities for different neutrino flavors and the graphs of these probabilities are presented at some test values of model parameters.

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Primary authors: Dr FOMICHEV, S.V. (National Research Center "Kurchatov Institute"); Dr KHRUSCHOV, V.V. (National Research Center "Kurchatov Institute")

Presenter: Dr KHRUSCHOV, V.V. (National Research Center "Kurchatov Institute")

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