

EXPLANATION OF THE KNEE VIA INTERACTION WITH MASSIVE NEUTRINOS IN THE HALO

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Despite the effort done by many researchers, the interpretation of the knee in the cosmic ray spectrum at around $10^{15.5}$ eV remains controversial. We propose that this feature in the CR spectrum may be due to the interaction of nuclei with massive neutrinos in the halo. The required cross section, due to a neutrino magnetic dipole moment, is assumed to be larger than that predicted by the Standard Model. The position of the knee is determined by the neutrino mass. The values for the neutrino parameters obtained from the analysis of existing experimental data can be compatible with present bounds, making this an attractive explanation of the knee which can be confronted with future experiments.