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Probing low energy neutrino backgrounds with neutrino capture on beta decaying nuclei

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Abstract content

We present a study of the interaction of low energy electron neutrinos on nuclei that undergo beta decay. Remarkably, we found that in the limit of very low neutrino energy the product of the cross section times the neutrino velocity take values up to $10^{-42} \text{ cm}^2 c$ for some specific nuclei that decay via allowed transitions. The absence of an energy threshold and the value of the cross section single out these processes as the only ones having a realistic chance to unambiguously detect electron neutrino with small energy and mass. This represents a realistic though very demanding approach for future experiments aimed at a direct detection of the cosmological relic neutrino background.

If this papers is presented for a collaboration, please specify the collaboration

Summary

Reference

Proceedings of the 30th International Cosmic Ray Conference; Rogelio Caballero, Juan Carlos D'Olivo, Gustavo Medina-Tanco, Lukas Nellen, Federico A. Sánchez, José F. Valdés-Galicia (eds.); Universidad Nacional Autónoma de México, Mexico City, Mexico, 2008; Vol. 5 (HE part 2), pages 1531-1534

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