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Theoretical Uncertainty in the Tau Energy Loss

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Abstract content

We evaluate the muon and tau energy loss produced by photonuclear interactions at high energies by using different theoretical models. The theoretical uncertainty is estimated by taking different extrapolations of the DIS structure functions in the low and moderate Q^2 range at extremely low values of x where nuclear shadowing could be stronger than usually thought. Photonuclear interactions are the dominant energy loss mechanism for taus above 10^{15} GeV which controls the effective target volume for earth skimming tau neutrinos. The determination of the theoretical uncertainty in the calculation of these processes becomes crucial to stablish a tau neutrino bound.

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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 1499-1502

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