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## Tau polarization observables in neutrino - nucleus interactions at the LHC energy range

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Considering that the study of neutrino - nucleus interactions with incident neutrino energy ranges in the GeV - TeV range is feasible at the Large Hadron Collider, we investigate in this work the degree of polarization  $calP$  of the (anti) tau lepton produced in (anti) tau neutrino - tungsten interactions. We include nuclear effects to examine their impact on  $calP$ . In this study we also investigate the impact of the tau polarization on the pions generated in its decay. In particular, we estimate the associated pion momentum, energy and angular distributions. The contribution of the  $F_5$  structure function to these observables is also investigated. Our results indicate that the pion properties are sensitive to the tau polarization state as well as to the magnitude of  $F_5$ .

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