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## Improving Simulation of Tau Neutrinos Using Polarization Information

*Sunday, January 22, 2023 8:54 AM (12 minutes)*

Detecting tau neutrinos is extremely difficult due to the similarities the process has with the backgrounds. Therefore, accurate modeling of the tau neutrino charged current interaction and subsequent tau lepton decay is required. Codes that effectively decay the tau already exist, but all existing event generators that produce the tau result in considerable error due to inappropriate polarization approximations. The ACHILLES event generator fully calculates the polarization, thus accurately producing the tau. We show the polarization calculations within ACHILLES and the first steps towards connecting the ACHILLES event generator with SHERPA to decay the taus.

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**Session Classification:** Student Research Talks II