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Type: **Short talk (15min. + 5 min. Q/A)**

Surrogate model for final-state interactions of neutrino generator

Friday 31 October 2025 10:55 (15 minutes)

Final-state interactions (FSI) are a significant source of systematic uncertainty in neutrino event generators, particularly for LArTPC-based experiments. These interactions occur when particles produced in the initial neutrino-nucleus collision scatter or are absorbed while exiting the nucleus, complicating event reconstruction and interpretation. While advanced models such as GiBUU offer accurate simulations of FSI using many-body quantum transport theory, their high computational cost limits their applicability in large-scale analyses. In this talk, I will present ongoing work on developing a machine learning-based surrogate model designed to emulate the behavior of more detailed FSI simulations. I will discuss the current status, effectiveness, and the challenges and limitations associated with this approach.

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Session Classification: Neutrino-Nucleus Interaction Modeling