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Computing model of the DUNE Experiment

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The Deep Underground Neutrino Experiment (DUNE) will deploy, over the period 2025-2028, a 40-kton liquid argon TPC detector 1.5 km underground at the Sanford Underground Research Facility. A new broadband high-intensity neutrino source and Near Detector complex will be located at Fermilab, 1300 kilometers away.

This arrangement and the long data-taking run expected from 2029 and beyond, will provide unprecedented sensitivity in the search for neutrino CP violation, determination of the neutrino mass ordering, and precision measurements of neutrino mixing parameters. The underground Far Detector also allows for low background, low threshold observations of supernova neutrinos, with a unique sensitivity to the electron neutrino flux. Further, DUNE will conduct a wide range of searches for physics beyond the Standard Model, including baryon number violation, rare scattering processes, and non-standard flavor transitions.

The DUNE “events”, with a size ranging from 6 GBs to more than 100 TBs, for a ~30 PB of raw data per year, poses unique challenges for software and computing. In this contribution the status of the art of the data handling and the computing model of the experiment is described.

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