

DUNE Software and Computing Challenges

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The DUNE experiment will begin running in the late 2020's. The goals of the experiment include 1) studying neutrino oscillations using a beam of neutrinos from Fermilab in Illinois to the Sanford Underground Research Facility, 2) studying astrophysical neutrino sources and rare processes and 3) understanding the physics of neutrino interactions in matter. The DUNE Far Detector, consisting of four 17 kt LArTPC modules, will produce "events" ranging in size from 6 GBs to more than 100 TBs, posing unique challenges for DUNE software and computing. The data processing algorithms, particularly for raw data, drive the requirements for the future DUNE software framework. This paper provides an overview of the DUNE experiment, details early stages of DUNE raw data processing together with information on "event" rates and sizes, and summarises the current understanding of the DUNE software framework requirements. Finally, the timeline for DUNE computing together with early design concepts being tested with ProtoDUNE data are provided.

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