DUNE Computing Consortium

Conceptual Design Report

October 12, 2020

The DUNE Collaboration
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Chapter 1

Monitoring

Values

1.1 Tools

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1.1.1 ETF

1.1.2 PerSonar

1.2 Summary of Assumptions and Resources

1.2.1 Assumptions

1.2.2 Development needs

1.2.3 Compute resource needs

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Table 1.2: Operations needs for Monitoring

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Glossary

**conventional facilities (CF)** Pertaining to construction and operation of buildings and conventional infrastructure, and for LBNF and DUNE project (LBNF/DUNE), CF includes the excavation caverns. 4

**Deep Underground Neutrino Experiment (DUNE)** A leading-edge, international experiment for neutrino science and proton decay studies. 4

**far detector (FD)** The 70 kt total (40 kt fiducial) mass liquid argon time-projection chamber (LArTPC) DUNE detector, composed of four 17.5 kt total (10 kt fiducial) mass modules, to be installed at the far site at Sanford Underground Research Facility (SURF) in Lead, SD, USA. 4

**far site conventional facilities (FSCF)** The conventional facilities (CF) at the DUNE far detector site, SURF. 4

**liquid argon (LAr)** Argon in its liquid phase; it is a cryogenic liquid with a boiling point of 87 K and density of 1.4 g/ml. 5

**liquid argon time-projection chamber (LArTPC)** A time projection chamber (TPC) filled with liquid argon; the basis for the Deep Underground Neutrino Experiment (DUNE) far detector (FD) modules. 4

**Long-Baseline Neutrino Facility (LBNF)** The organizational entity responsible for developing the neutrino beam, the cryostats and cryogenics systems, and the conventional facilities for DUNE. 4

**LBNF and DUNE project (LBNF/DUNE)** The overall global project, including Long-Baseline Neutrino Facility (LBNF) and DUNE. 4

**Sanford Underground Research Facility (SURF)** The laboratory in South Dakota where the LBNF far site conventional facilities (FSCF) will be constructed and the DUNE FD will be installed and operated. 4
time projection chamber (TPC) A type of particle detector that uses an E field together with a sensitive volume of gas or liquid, e.g., liquid argon (LAr), to perform a 3D reconstruction of a particle trajectory or interaction. The activity is recorded by digitizing the waveforms of current induced on the anode as the distribution of ionization charge passes by or is collected on the electrode (TPC is also used for “total project cost”).
References