

## **Snowmass Letter of Interest:**

### **Interest to capitalize on the Long Baseline Neutrino Facility (LBNF) investment**

This LoI is from US institutional members of the DUNE collaboration to participate in construction of the remaining aspects of the DUNE experiment beyond the current LBNF/DUNE-US project.

The physics program of the Deep Underground Neutrino Experiment (DUNE) searches for leptonic CP violation, nucleon decay, and supernovae neutrinos, with 40kT far detector fiducial mass and a capable near detector and was endorsed by the previous Snowmass and P5 in 2014 (and is described in the four DUNE Lols to this Snowmass). Since that time tremendous progress has been made on the design and initial excavation of the LBNF underground facility at the Sanford Underground Research Facility (SURF). This is a premier worldwide site for physics requiring low backgrounds and provides a prime opportunity for understanding neutrino mass and mixing.

The US and international partners will initiate this exciting physics program with a new neutrino beamline, full far and near detector facilities, the first two of four 17kT liquid argon time projection chambers (10kT fiducial mass) and key components of the near detector. Fully realizing the P5-endorsed physics goals of DUNE, requires the full far detector mass and the complete near detector as described in the DUNE TDR. It is imperative that the US, as host country representing half the membership of DUNE, support US institutions to complete the full scope of the DUNE detector along with our international partners.

US DUNE institutions wishing to participate in the construction of the remaining DUNE far and near detectors: Abilene Christian University, Augustana University, University of California Berkeley, Brookhaven National Laboratory, California Institute of Technology, University of Chicago, University of Cincinnati, University of Colorado Boulder, Colorado State University, Dakota State University, University of California Davis, Fermi National Accelerator Laboratory, Harvard University, University of Houston, Illinois Institute of Technology, Indiana University, Iowa State University, University of California Irvine, Kansas State University, Lawrence Berkeley National Laboratory, Los Alamos National Laboratory, Michigan State University, University of Michigan, University of Minnesota, University of Mississippi, University of North Dakota, Northwestern University, University of Notre Dame, Pacific Northwest National Laboratory, University of Pennsylvania, University of Pittsburgh, University of Puerto Rico-Mayaguez, Rutgers University, San Jose State University, University of California Santa Barbara, SLAC National Accelerator Laboratory, University of South Carolina, University of South Dakota, South Dakota School of Mines and Technology, Southern Methodist University, Stony Brook University, Syracuse University, University of Tennessee Knoxville, Texas A&M University - Corpus Christi, University of Texas Arlington, Virginia Tech, Wichita State University, University of Wisconsin-Madison, Yale University