



$u^b$

<sup>b</sup>  
UNIVERSITÄT  
BERN

AEC  
ALBERT EINSTEIN CENTER  
FOR FUNDAMENTAL PHYSICS

LABORATORIUM FÜR HOCHENERGIEPHYSIK  
**LHEP**  
UNIVERSITÄT BERN

# ArgonCube

To do list

A. Ereditato – University of Bern

## Letter of Intent

# ArgonCube: a Modular Approach for Liquid Argon TPC Neutrino Detectors for Near Detector Environments

C. Azevedo, A. L. Silva, J. Veloso  
I3N, Physics Department, University of Aveiro, 3810-193 Aveiro, Portugal

T. Gamble, N. McConkey, N. J. C. Spooner, M. Thiesse, M. H. Wright  
University of Sheffield, Western Bank, Sheffield S10 2TN, UK

J. Bremer, U. Kose, D. Mladenov, M. Nessi, F. Noto  
European Organization for Particle Physics (CERN), Geneva, Switzerland

M. Auger, Y. Chen, A. Ereditato<sup>a</sup>, D. Göldi, R. Hänni, I. Kreslo<sup>b</sup>, D. Lorca, M. Lüthi, P. Lutz,  
J. R. Sinclair<sup>c</sup>, M. Weber  
Albert Einstein Center for Fundamental Physics (AEC) - Laboratory for High Energy Physics  
(LHEP), University of Bern, Bern, Switzerland

D. Bleiner, A. Borgschulte  
Swiss Federal Laboratories for Materials and Technology (EMPA), CH-8600 Dübendorf, Switzerland

M. Zeyrek  
Middle East Technical University (METU), TR-06800, Ankara, Turkey

F. Bay  
TUBITAK Space Technologies Research Institute (TUBITAK UZAY), METU Campus, TR-06800,  
Ankara, Turkey

N. Anfimov, A. Olshevskiy, A. Selyunin, S. Sokolov, A. Sotnikov  
Joint Institute for Nuclear Research (JINR), Joliot-Curie 6, 141980 Dubna, Moscow region, Russia

D. A. Dwyer, D. Gnani, C. Grace, S. Kohn, M. Kramer, A. Krieger, K. B. Luk, P. Madigan, C. Marshall  
University of California and Lawrence Berkeley National Laboratory, Berkeley, CA 94720, USA

M. Convery, Y-T. Tsai, T. Usher  
SLAC National Accelerator Laboratory, 2575 Sand Hill Rd, Menlo Park, CA 94025, USA

M. Mooney  
Colorado State University, Fort Collins, CO 80523, USA

J. Asaadi, H. Sullivan  
University of Texas at Arlington, 701 S Nedderman Dr, Arlington, TX 76019, USA

K. Cankocak, J. Nachtman, Y. Onel, A. Penzo  
University of Iowa High Energy Physics Group, Iowa City, IA 52242, USA

A. Marchionni, O. Palamara, J. L. Raaf, G. P. Zeller  
Fermi National Accelerator Laboratory (FNAL), Batavia, IL 60510 USA

M. Soderberg  
Syracuse University, Syracuse, NY 13210, USA

M. Bishai, H. Chen, M. Diwan, F. Lanni, Y. Li, D. Lissauer, X. Qian, V. Radeka, B. Yu  
Brookhaven National Laboratory (BNL), Upton, NY 11973-5000, USA

B. Fleming, S. Tufanli  
Yale University, Wright Laboratory, New Haven, CT 06520 USA

R. Guenette  
Harvard University, Cambridge, MA 02138, USA

C. Kuruppu, S. R. Mishra, R. Petti  
University of South Carolina, 712 Main Street, Columbia, SC 29208 USA

Update and formalize  
responsibilities

CERN-SPSC-2017-025 / SPSC-I-246  
13/06/2017



Recommendations from  
the DUNE ND WG

- **LAr Detector**

- "The ND CD group recommends that DUNE should have a LArTPC that is optically segmented, with a short drift and 2D pixelized readout, like the concept under study by the ArgonCube collaboration."

- **ND Hall Size**

- "The ND CD group recommends that the ND hall should be sized to allow measurements of neutrino interactions at distances up to 35m transverse to the beam axis."
- "The ND CD group recommends that the length of the ND hall in the z direction\* be at least 17m at the on axis location."
- \* Note, the z direction differs from the beam direction by the beam angle (0.101rad).

- **DUNE PRISM**

- "The ND CD group recommends that the DUNE PRISM concept be studied further to quantify the improvement in CP sensitivity with the most realistically implementable and comprehensive systematic effects. The ND CD group recommends that, in parallel, the DUNE PRISM concept be studied for technical feasibility and cost."

## Call for proposals for projects at the CERN Neutrino Platform after LS2

The CERN Neutrino Platform was created to assist collaborations of European scientists working on neutrino physics in developing equipment and techniques for use at long-baseline experiments in Japan and the USA. The Neutrino Platform supports generic detector R&D and large detector prototypes or demonstrators. It gives technical, financial and logistical support to approved projects.

The Neutrino Platform has supported users in the development of detectors for experiments at FNAL and at Tokai, and along with use of multiple test beam lines at CERN also comprises the dedicated beamlines in EHN1. Projects in the Neutrino Platform have also involved the participation of CERN experts in detectors and cryogenics.

Following the Long Shutdown scheduled for the end of the accelerator complex running in 2018 (LS2), there may be opportunities for new or upgraded projects to be considered for approval as Neutrino Platform projects.

The SPSC is issuing a call for proposals for projects at the Neutrino Platform following LS2.

Proposals should be submitted to the SPSC by October 2018 and should address the physics or technology case behind the proposal, what are the expected use of CERN resources requested by the proposal, what are the relationships with Neutrino experiments outside of Europe, and what are the expected contributions of participating European collaborators.

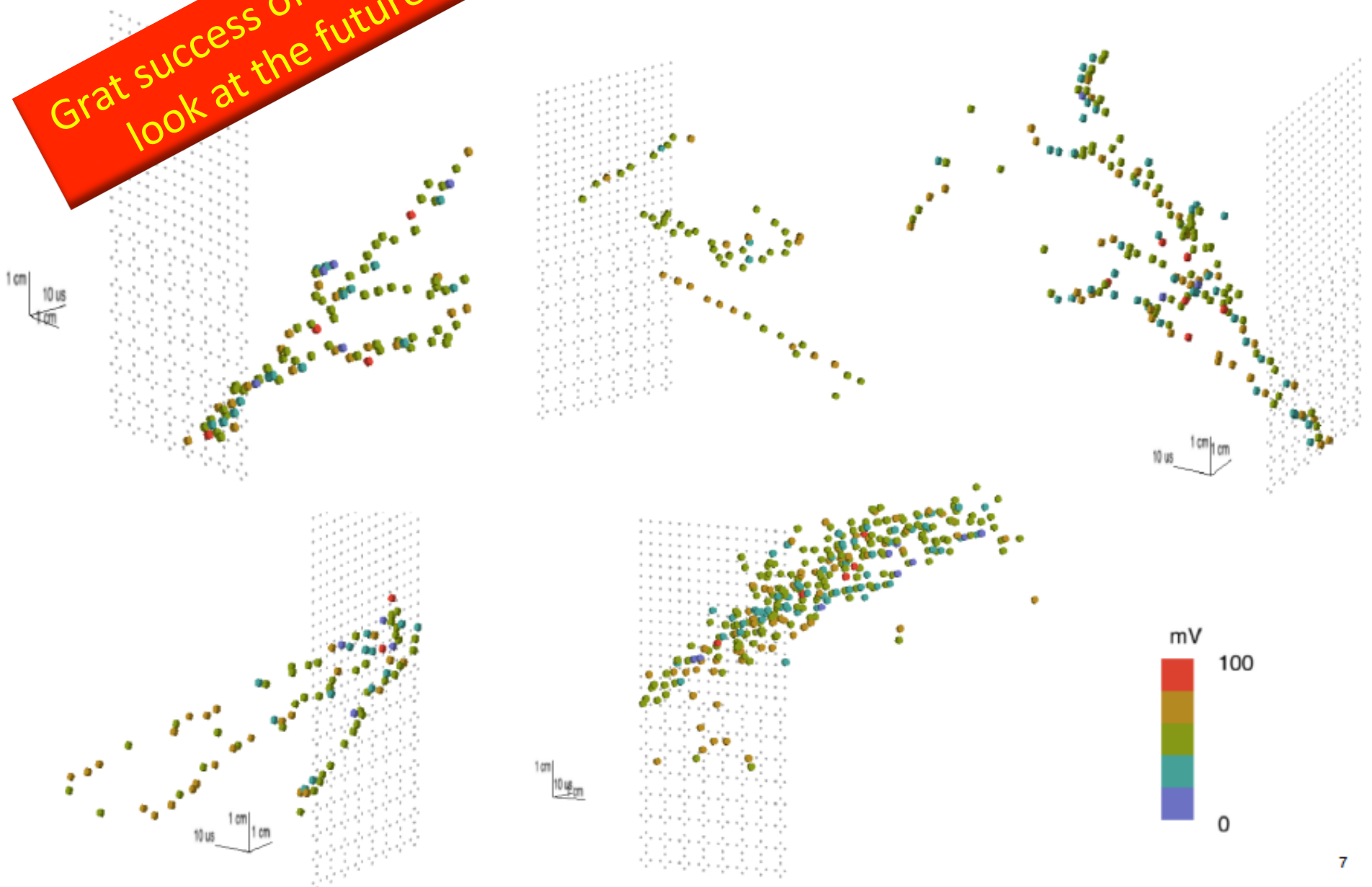
The SPSC expects to prepare recommendations to the Research Board for approval of experiments by April 2019.

Any current proposals for Neutrino Platform projects will be considered as part of this evaluation.

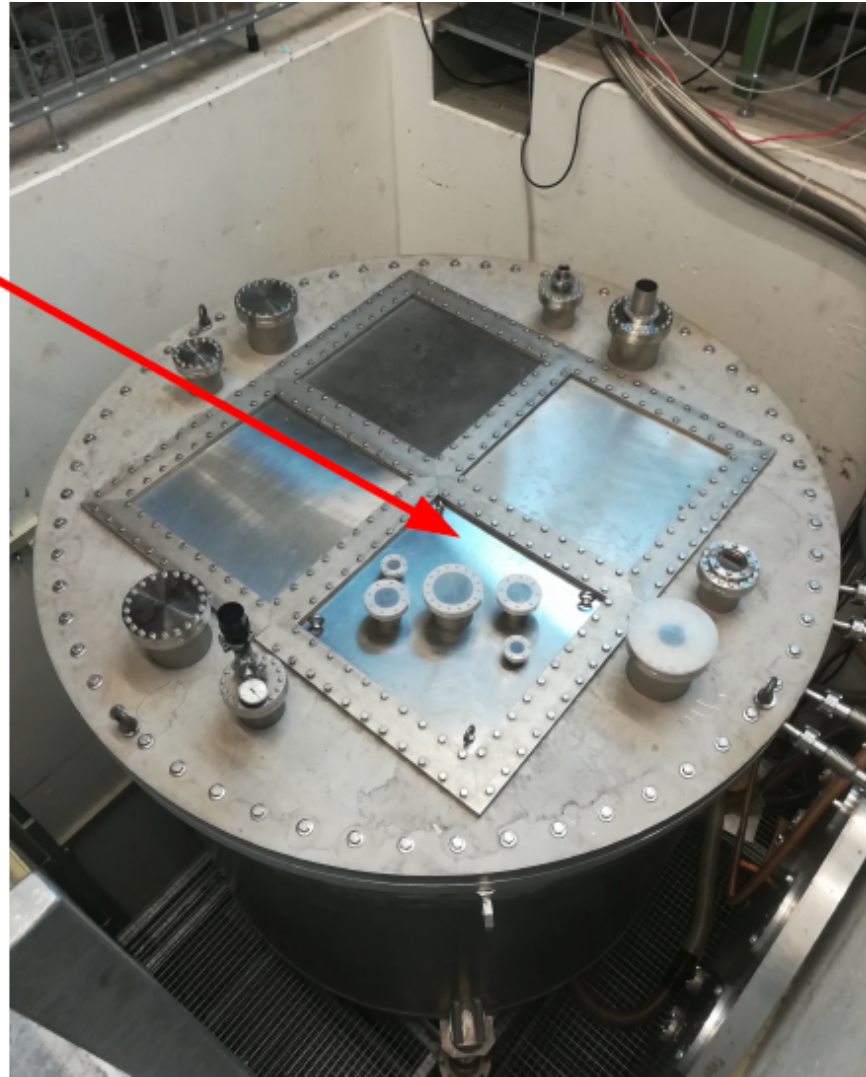
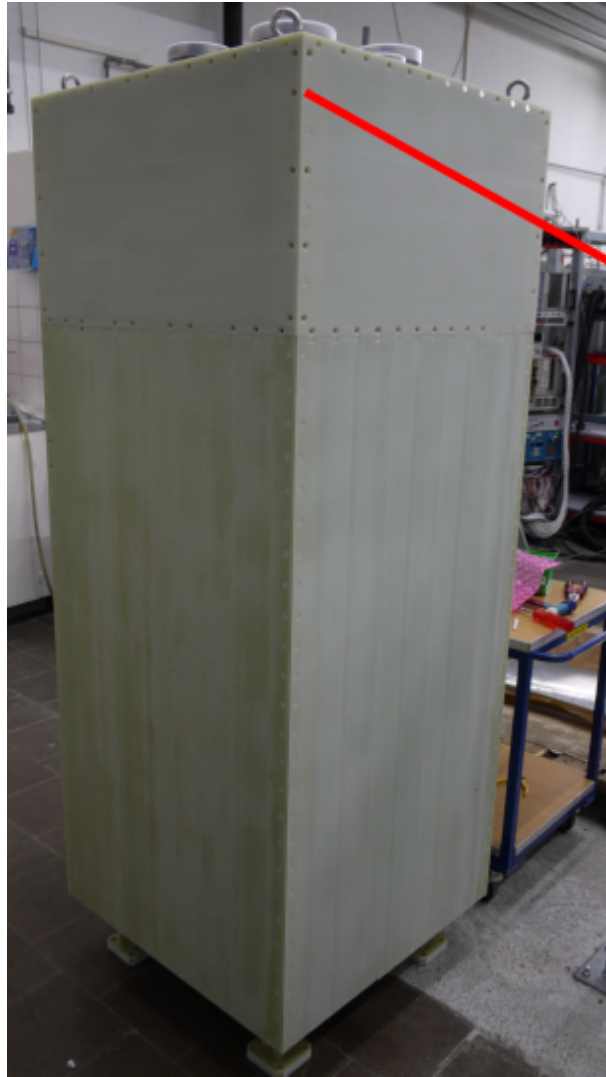
This is the first of what is expected to be periodic calls for users at the Neutrino Platform. Potential applicants are invited to address questions about the process to the scientific secretary of the SPSC.

Decide our strategy

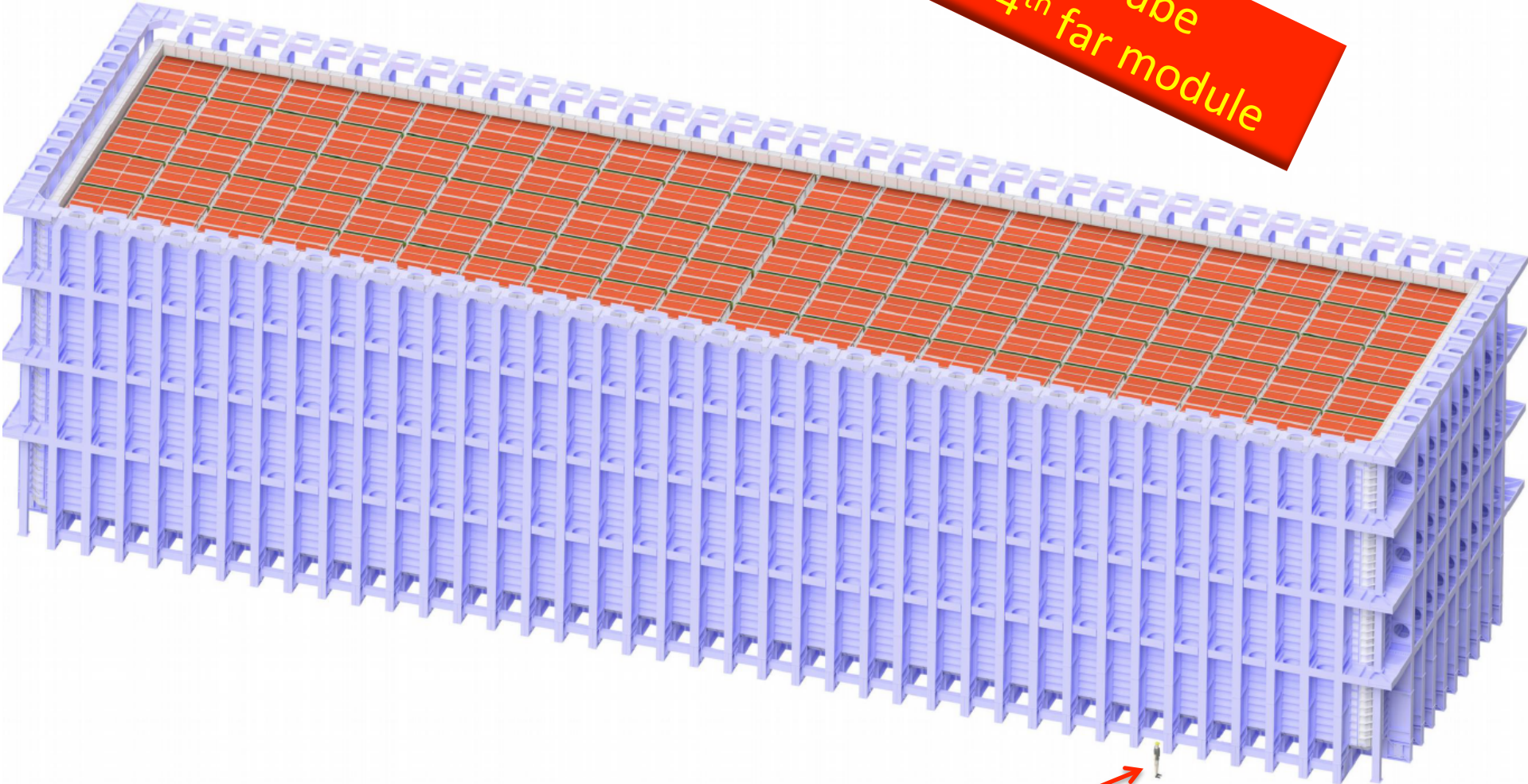
Great success of the R&D  
look at the future



2x2 @ FNAL:  
The 2019 challenge



ArgonCube  
as the 4<sup>th</sup> far module



Martin Auger



Many activities:  
Think of funding....

\$ £ ¥ €



Thank you for coming,  
enjoy the meeting,  
enjoy Bern!

