Goals of Workshop

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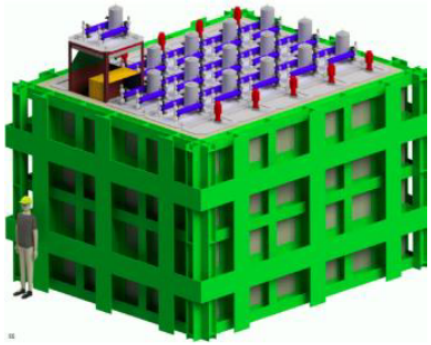
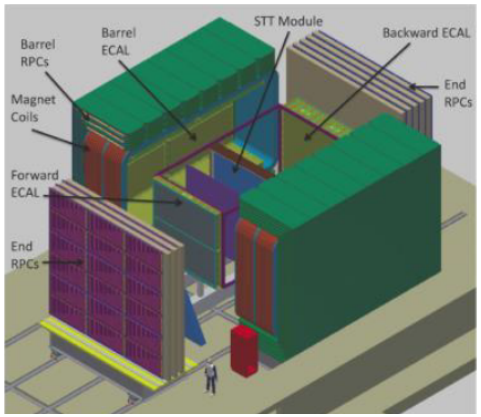
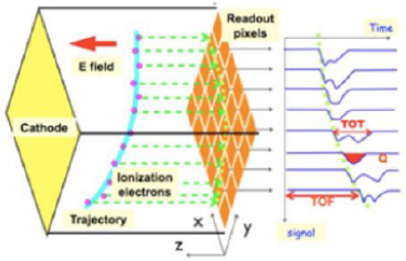
Concepts on the Table

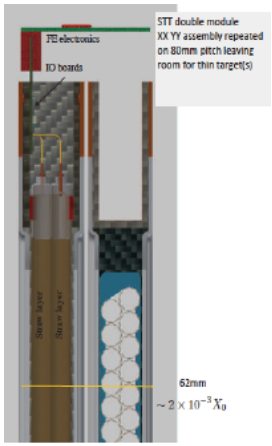
- A non-magnetized LAr TPC



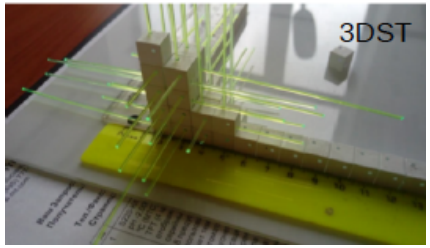
- A multi-purpose magnetic tracker (MPT) downstream of LAr TPC
  - A gaseous TPC, Straw-tube tracker







  - augmented with 3DST



  - KLOE solenoid, dipole
- PRISM
  - Movable detector at off-axis positions

Issues

- Outstanding questions to be addressed
  - What kind of magnet for the downstream spectrometer?
    - Re-use KLOE superconducting solenoid or a new-build dipole?
  - What kind of tracking technology for the downstream spectrometer?
    - Straw-tube tracker or high-pressure gaseous-argon TPC?
  - Should the downstream spectrometer augmented with 3D ST?
  - Should we adopt the PRISM concept?
  - For LAr TPC
    - Should we use pixelated readout?
    - What are the dimensions?
    - Can it handle pileup?

Studies To Be Performed

- In the November 2017 workshop, participants agreed to
  - Use common software tools developed within the Concept Study for direct comparison of different proposals
  - A set of questions on performance or improvements to be addressed for each concept
  - Provide answers to some key physics processes
    - Neutrino-electron elastic scattering
    - Coherent pi0 and pi+/-
    - Low nu (250-MeV cut)
    - CC Inclusive (electron/muon)
    - NC/CC pi0

Timeline of ND

Target date	Milestone
Jan-17	Launch of expressions of interest in ND Concept Study
Mar-17	ND Concept Study workshop
May-17	Define two/three ND concept options for further study
Jun-17	ND Concept Study workshop
Nov-17	ND Concept Study workshop (CERN)
Nov-17	Document criteria/physics processes for ND tracker choice
Nov-17	Document criteria for comparison of magnet options
Dec-17	Report on cost implications/technical risks of Solenoid option
Jan-18	Status report on ND tracker studies - define next steps
Jan-18	Recommendattion on whether to purse PRISM concept
Jan-18	Report on scientific arguments for magnet to EC
Feb-18	Decision on ND Magnet
Mar-18	Report on comparison of tracker options and recommendation
Mar-18	Report on benefits of PRISM concept and recommendation
Mar-18	Report on benefits of 3-D scintillater as part of MPT and recommendation
Mar-18	ND Concept Study workshop
Apr-18	Decision on PRISM concept
Apr-18	Decision on 3-D scintillator
Apr-18	Decision on ND Tracker technology
May-18	Decision on the conceptual design of the near detector systems
Jun-18	Start of ND EoI process
Apr-19	Draft of CDR for Near Detector
Aug-19	Review of Near Detector CDR
Apr-20	TDR for Near Detector
Jun-20	LBNC Review of Near Detector TDR
Aug-20	CD-3 and LBNC Reviews for near site and Near Detector

Status

- At the January 2018 collaboration meeting, agreed
  - to continue the PRISM study
  - Need further study, especially muon acceptance, for comparing the KLOE solenoid and dipole
- Based on the scientific findings of the working groups, a draft report on the magnet option has been circulated within Concept Study
  - Get approval from Concept Study
  - Submit report and recommendation to the spokespersons in the near future
  - EC will consider the recommendation from Concept Study with the technical and cost impacts of the two options taken into account to reach a decision on the choice of magnet

Goals

- Goals of the 4th workshop *based on relative scientific merits*
  - Decide on the choice of tracking for the downstream spectrometer
  - Decide whether the 3DST should be incorporated into the ND Concept
  - Decide whether the PRISM concept should be implemented
  - Decide whether pixelated readout be used for the LAr TPC and firm up its dimensions
  - Begin to formulate a Concept to be presented to the Collaboration at the May collaboration meeting.
- Draft reports providing
  - Recommendations on choice of tracking technology along with institutional interests and plausible funding model
  - Recommendations on the 3DST
  - Recommendations on PRISM