Towards the TDR

M. Tenti - Bologna

SAND integration w/ DUNE

- SAND needs to be much more integrated in the DUNE Collaboration

- We need liaison people

  - **NIUWG** : **missing**

    - Neutrino interaction uncertainties
      [DUNE-PHYSICS-NU-INTERACTIONS-SM@listserv.fnal.gov]

  - **LBL** : **missing**

    - Long baseline oscillations
      [DUNE-PHYSICS-LBL@listserv.fnal.gov]

  - **ND sim/reco** : M. Tenti [Bologna]

    - ND simulation and reco
      [DUNE-ND-RECO-SIM@listserv.fnal.gov]

  - **BSM** : **missing**

    - Beyond Standard Model
      [DUNE-PHYSICS-BSM@listserv.fnal.gov]

Towards the TDR

- First draft to be ready within December 2024

- We need to be ready for the TDR

  - Identify top priorities

  - Identify responsibilities

  - Speed-up the progress

    - Weekly meeting instead of by-weekly

    - list of action items at each meeting

TENTATIVE INDEX (details to be discussed with WG convenors)

Introduction and Overview - requirements and opportunities

ECAL – features and required performances, shipping, I&I …

Magnet – features and requirements, shipping, I&I, cryogenics …

GRAIN – lenses and coded masks, ASIC, mechanics, cryogenics, I&I

Tracker – STT / wire chamber, requirements, mechanics, muon catcher

Hall and Facilities – alcove area, mounting tools, logistic supply chain, sequence of operations, safety

DAQ – trigger, time stamp, general architecture

Computing – software architecture, integration in DUNE workflow, production of analysis files

Analysis – simulation, event reconstruction, physics analyses …

Management – schedule and milestones, risk management

Possible upgrades – GRAIN charge readout, new targets

Glossary
Bibliography

sandreco

- **DO NOT CONSIDER IT AS A FINALIZED PRODUCT**

- It needs the contributions of **everyone**

- **Top priority**:

  - Kalman filter

  - ECAL clustering

- In addition, we need a **full event reconstruction**
  i.e vertex reco, particle ID, reco of neutrino energy and flavor

- CAF

- Moreover, there is a list of github <u>issues</u> to be addressed

Studies for TDR

- LBL analysis in TDR

  - Detector systematics

  - H sample

- SAND design in TDR **Top Priority**

  - μ/π separation

  - eID: TRD vs ECAL

  - Comparison straw- VS drift- based tracker

- Other needs may arise from within other SAND WG

- Studies are better if tracked in baltig

List of past/current contributors

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In addition D. Casazza, R. D'Amico and maybe other I forgot

But still not sufficient for the number of items to be addressed.

So we need to agree on the top priorities now.

Then, I will circulate a list of agreed items asking for contributors

Contributors

Paolo Gauzzi	Sapienza/Roma1
Grigory Vorobyev	JINR
Artem Chukanov	JINR
Paolo Bernardini	Lecce
Antonio Surdo	Lecce
Francesca Alemanno	Lecce
Denise Casazza	Ferrara
Riccardo D'amico	Ferrara
Valerio Pia	Bologna
Giulia Lupi	Bologna
Gianfranco Ingratta	Bologna

ECAL clustering	Kalman Filter	Proton/pion separation	Muon/pion separation	Electron identification	Straw -VS drift-based tracker	Event reconstruction
D. Casazza R. D'amico P. Gauzzi	V. Pia G. Lupi A. Chukanov G. Vorobyev	A. Chukanov G. Vorobyev	D. Casazza R. D'amico	D. Casazza R. D'amico P. Gauzzi	G. Ingratta	P. Bernardini A. Surdo F. Alemanno

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DUNE

Plan

- We will have weekly meetings, starting for tomorrow ….usual time slot

- We will have a shared google docs to take notes and the list of action items

- Tomorrow, I would like to hear the plans and the needs from the contributors

DIscussion

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  - **LBL**   : **missing**

    - Long baseline oscillations   [DUNE-PHYSICS-LBL@listserv.fnal.gov]

  - **ND sim/reco**   : M. Tenti   Bologna

  - **Software Framework**   : M. Tenti, N. Tosi   Bologna

- For Italian people: DUNE-Italia integration w/ DUNE Computing

  - Attendance of **DUNE computing sites meeting**….**missing**

- Without forgetting

  - **BSM**   : **missing**