

# Towards the TDR

M. Tenti - Bologna

# Towards the TDR

- **Top priority** studies has been identified
- A list of agreed items has been circulated asking for **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
Matteo Sorbara	Roma2
Antonio Gioiosa	Roma2

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 M. Sorbara A. Gioiosa	P. Bernardini A. Surdo F. Alemanno

# Meetings

- Starting from 21/02 we have regular weekly meetings
- A shared google docs is used to take notes [[here the folder](#)]
- Meetings are recorded [[here the folder](#)]
- A list of action items is produced and checked during the meeting
- Notes, video and action items can be found in the corresponding indico agenda

# Past meetings

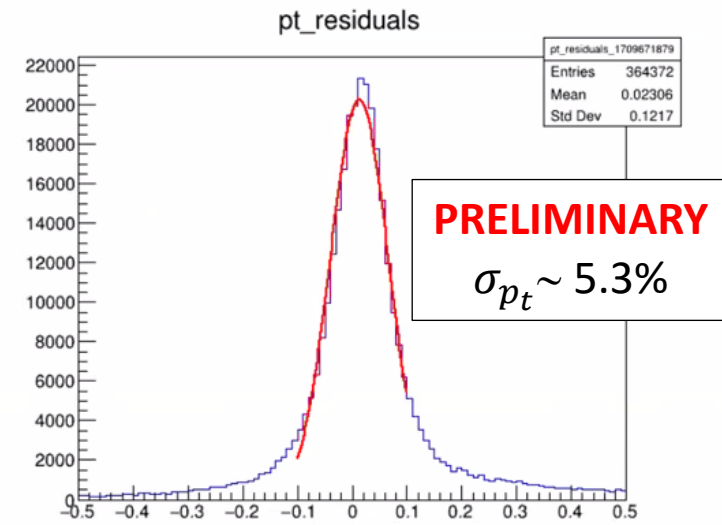
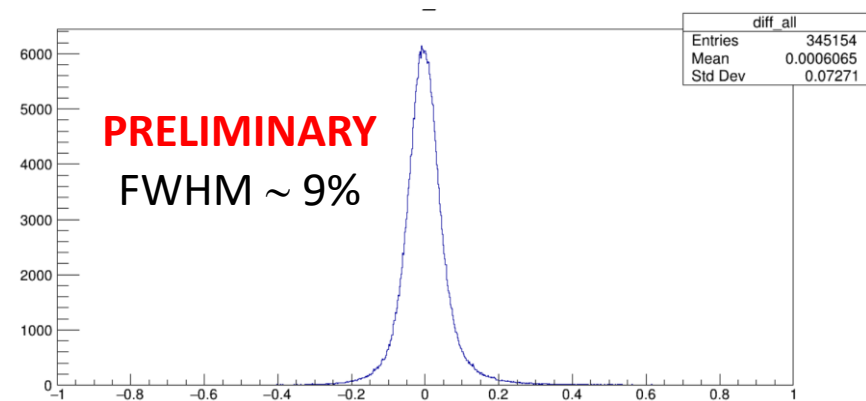
- First meeting dedicated to understand the plans and the needs of the contributors
- **Ferrara** (DC & RdA) is validating the clustering algorithm with muon and electrons. This is a preliminary step before starting the assessment of the performances of ECAL in particle ID ( $e/\pi$ ,  $\mu/\pi$ )
- **Roma2** (MS) together with SDF is aiming to study and compare the straw- vs drift- based tracker performances

# Past meetings

- **Bologna**

- (VP) is validating the KF with a simplified simulation. Results are encouraging and it is ready to be tested with a full simulation.
- (GI) *simplified* track reco algorithm. likelihood comparing exp. and obs. *radius* to find the best helix. A study on how to handle the delay due to signal propagation along the wire is on going.

N.B. This is intended as a fast way to validate physics studies with a reasonable reco.



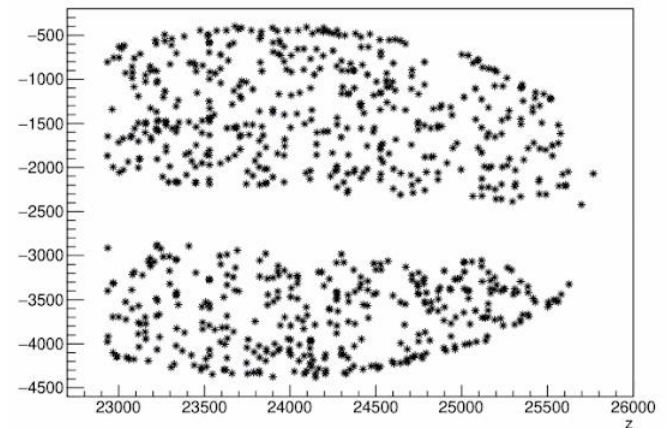
# Past meetings

- **Lecce (FA, AS & PB)**

- shows the results of the preliminary comparison between old results (FLUKA-based) and the new with interactions in GRAIN. Number of nuclear fragments not in agreement.
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- Additional production in STT volume revealed a strange issue. Investigation in progress.

Particles	FLUKA	sandreco	sandreco + GRAIN
Pions	~1.4/ev	~1.8/ev	~1.7/ev
Protons	~2.1/ev	~2.3/ev	~2.4/ev
Neutrons	~2.9/ev	~2.1/ev	~2.2/ev
Nuclei	~2.6/ev (various nuclear fragments)	~0.003/ev (only Ar40)	~0.002/ev (only Ar40)
Photons	~1.4/ev	~0.02/ev	~0.02/ev

Z vs Y for interactions in STT



# 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** : L. Di Noto [Genova]
    - 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** : D. Montanino [Lecce]
    - Beyond Standard Model  
[DUNE-PHYSICS-BSM@listserv.fnal.gov]
  - **BEAM** : **missing**
    - Beam Interface  
[DUNE-PHYSICS-BEAM@listserv.fnal.gov]

# Calendar

Monday	Tuesday	Wednesday	Thursday	Friday
<b>11/03</b>  16.00 [CET]: *** <u>CANCELLED</u> *** <a href="#">Zoom</a> , <a href="#">Agenda</a> <b>NIUWG/DIRT2</b> <b>meeting</b>	<b>12/03</b>  16.00 [CET]: <a href="#">Zoom</a> , <a href="#">Document</a> Frameworks TF meeting	<b>13/03</b>  15.00 [CET]: <a href="#">Zoom</a> , <a href="#">Agenda</a> <b>SAND</b> <b>Physics/Software</b> <b>meeting</b>	<b>14/03</b>	<b>15/03</b>
<b>18/03</b>  17:00 [CET]: *** TBC *** <b>LBL Meeting</b>	<b>19/03</b>	<b>20/03</b>  15.00 [CET]: <b>SAND</b> <b>Physics/Software</b> <b>meeting</b>  17.00 [CET]: *** TBC *** <b>ND Sim Reco Meeting</b>	<b>21/03</b>	<b>22/03</b>
<b>25/03</b>  16.00 [CET]: *** TBC *** <b>NIUWG/DIRT2</b> <b>meeting</b>	<b>26/03</b>	<b>27/03</b>  15.00 [CET]: <b>SAND</b> <b>Physics/Software</b> <b>meeting</b>	<b>28/03</b>	<b>29/03</b>



# Thank you