## **Analysis of FOOT Performances Skype Meeting**

# Trento Test Beam of Beam Monitor Drift Chamber: preliminary results

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- the BM is a drift chamber of 11cm x 11cm x 20cm
- 12 layers with 3 drift cells per layer
- rectangular cell shape (16mm x 10mm)

#### **Purpose in FOOT**

Measure the direction of the incident beam and reject the events in which the

primary ion has fragmentated before the target

(mostly in the start counter scintillator and in the beam monitor material)

#### EXPERIMENTAL SETUP



## EXPERIMENTAL SETUP



VME acquisition:

- TDC: 36 BM ch + trigger
- SCALER: 15 BM ch + trigger



Measurement of the efficiency as a function of the HV

> Spot reconstruction at different energies

> Different BM position with respect to the beam direction

> Layer of Tantalum in front of the beam exit window

➤ Layer of Tantalum + Wedge

### 1st TEST: EFFICENCY as a function of the HV





**Method:** The efficiency has been estimated by considering events with three consecutive fired wires in even (odd) layers and then looking for the presence of hits in the odd (even) ones (*A. Paoloni et al.*)

#### SOME TRACKS

> Tracks reconstructed with Genfit starting from FIRST space-time relations



#### 2<sup>nd</sup> TEST: PRELIMINARY SPOT RECONSTRUCTION

@ HV : 2200 V



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#### Beam sigma consistent with the previous beam characterization (F. Tommasino et al.)



### 5th TEST: LAYER OF TANTALUM

148MeV - protons

HV: 2150 V

2.5 mm Tantalum at the beam exit window

Beam

Two different energies:

- 148 MeV beam -> ≈ 135 MeV at the BM
- 70 MeV beam -> ≈ 48 MeV at the BM



#### 6<sup>th</sup> TEST: LAYER OF TANTALUM + WEDGE



148MeV - protons HV: 2150 V

mylar1 projected tracks mylar2 projected tracks Entries 74883 -0.01257Mean x Mean v y[cm] Mean y 0.1174 Std Dev x Std Dev x 1.11 Std Dev y 1.096 的现在分词 法无疑 题上 法法法的保管公司 化硫酸 新新山口空和延生的 2 n -2 -1 2 x[cm] x[cm]

mylar1\_xy

...See you in Torino for updates! 🙂

- Reconstruction issues due to ST relations:
  - Improve the analysis (handling of t0, play with different ST rel)
  - Test beam with external tracker (MSD by Perugia) for single-cell calibration @Trento
  - Can we learn something from Garfield++?
- Estimation of BM resolution
- > Test beam with Carbon beam @CNAO (January 2019?) with MSD + Start Counter (?)
- Get ready for GSI (e.g. develop "online" monitor function)





#### **BACKUP SLIDES**

