



The Wire Chambers: User friendly

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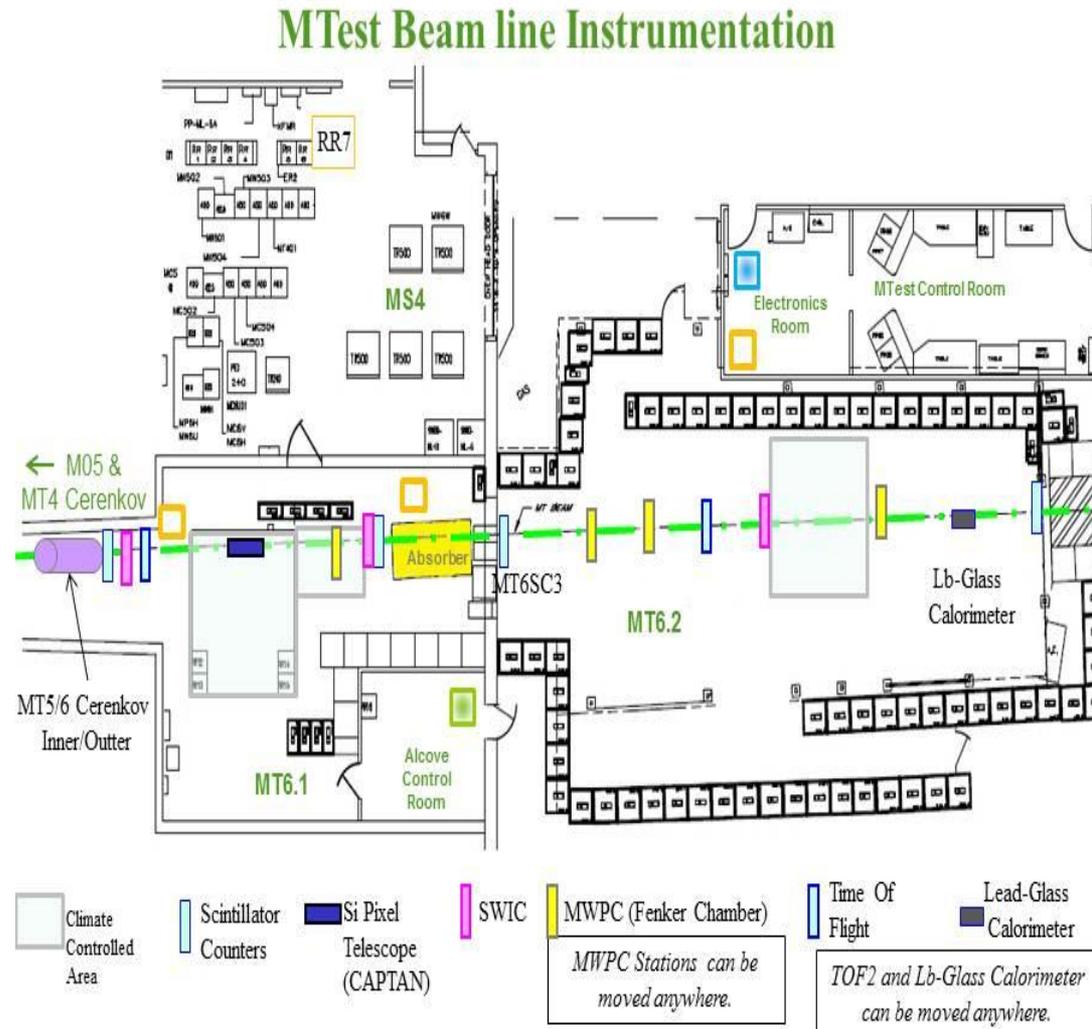
Advisors: Mandy Rominsky and Evan Niner

Location: The Fermilab Test Beam Facility

06/10/2019

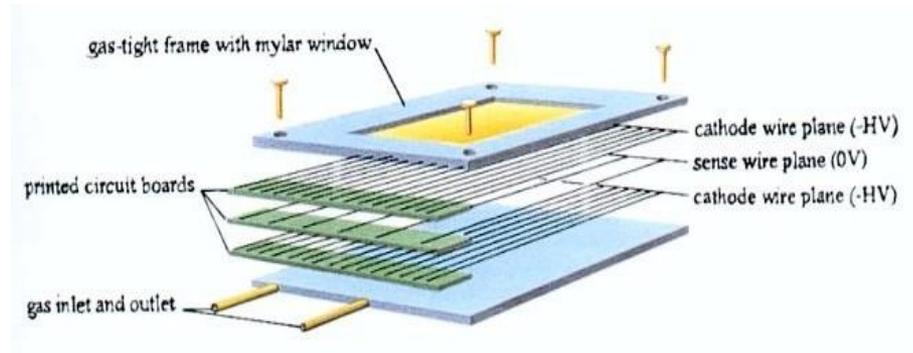
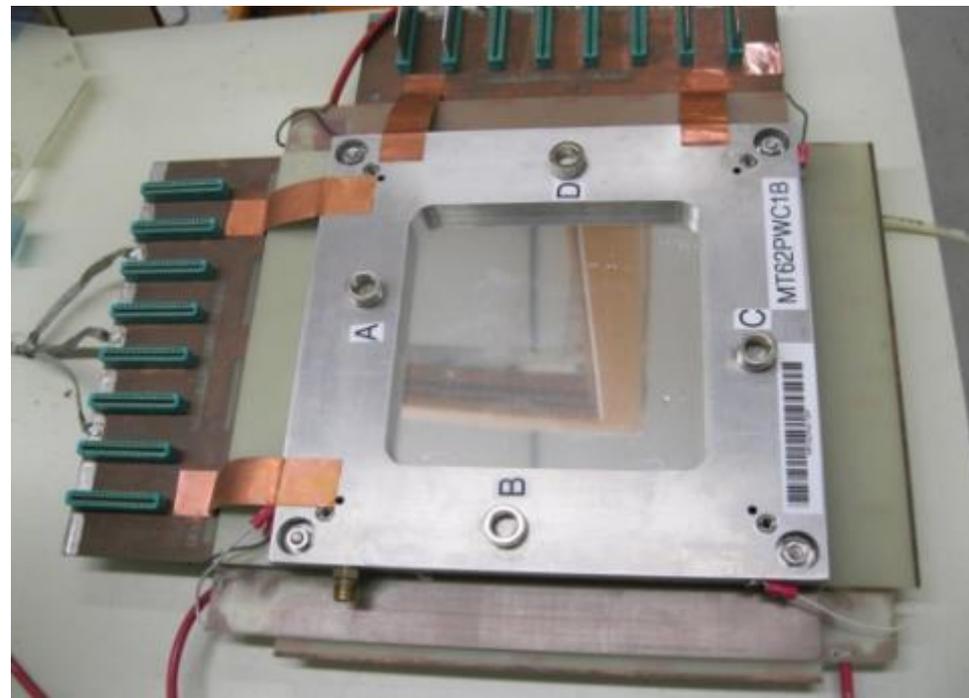
Beam and Users

- The FTBF is one of the few that carries a beam that can handle high energy that is devoted to detector research and development
- The FTBF has two beam lines, the MTest and MCenter to provide a variety particle types such as a proton beam and secondary particles called muons, pions, electrons, and kaons.



Wire Chambers

- Structure/Description:
 - The Multi Wire Proportional Chambers (MWPC) is a small rectangular shape instrument that contains multiple wires inside these two planes.
 - These Wires are going through vertical and horizontal, creating a grid.
 - 128 wires exact
 - The chambers (4) uses nonmetric amplifier-discriminator cards, where there are 8 cards installed in each plane.



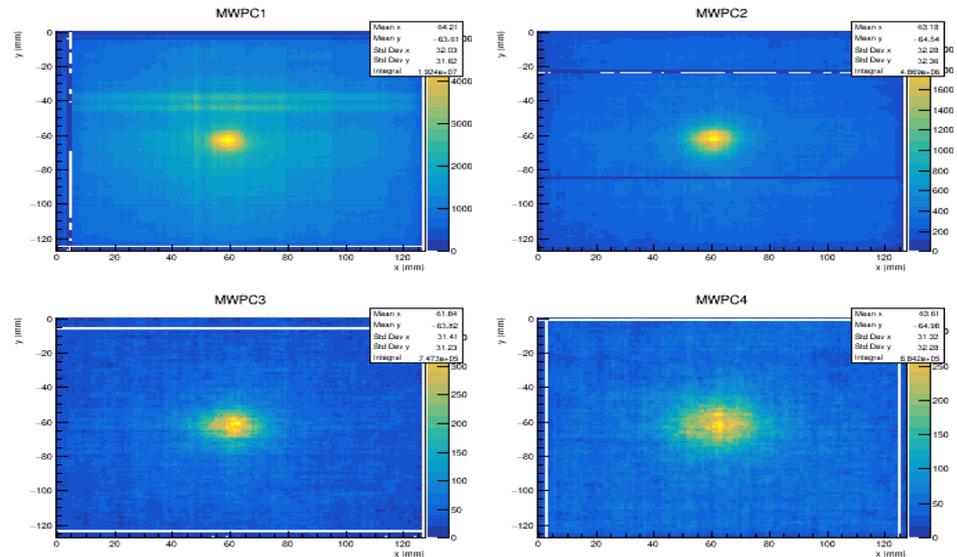
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Use:

- It was designed to reduce the amount of matter in the path of the beam.
- When it is passing through these chambers, the beam will hit these wires causing there to collect data of where and when the beam hit any of the wires.
- This allows one able to adjust it.

Issues:

- Due to the intense level of beam, these chambers sometimes have difficulties collecting data from being overused.
- Therefore, they have to be internally fixed and then tested to put back in the beam.
- Each chamber can only handle a certain level of voltage.



Project: User Friendly

Information:

- Users are given multiple codes either from the facility or past users depending on their detector,
- If there is a problem, the FTBF staff is able to help and install their detectors.
- The purpose of these codes/programs is to adjust the beam in order to collect correct data.

Task:

- Improve and organize the multiple codes/programs, so that is accessible and user friendly for future users in order to run their detector's to collect the data from the Wire Chambers
- Able to improve and test these codes through the otsDAQ program.
- Learn and Use Roots and C++

