*Weekly AT-TPC meeting*

Thursday, March 25, 2010

9:30-10:00 am EST at Nuclear Conference Room

Attendees: D. Bazin, Z. Chajecki, M. Ford, W. Mittig, F. Montes, D. Suzuki, H. Wang, G. Westfall

* Capacitance measurement of the Micromegas (Mike)

Mike measured the capacitance of four Micromegas detectors with Jim Vincent. These Micromegas have a square surface with 9.35 x 9.35 cm2. The #1 and #2 detectors have 17 anode strips with a width of 5 mm, each separated by a 0.5 mm gap. The #3 and #4 detectors have a single anode without segmentation. The results of the measurements are listed below.

Figure : Picture of the #1 Micromegas

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Segmentation | Between the mesh and a strip | Between strips | Between the mesh and the entire anode |
| 1 | 17 strips | 115-120 pF | 50-60 pF | 1,370 pF |
| 2 | 17 strips | 140-150 pF | 50-60 pF | - |
| 3 | none | - | - | 1,150 pF |
| 4 | none | - | - | 1,250 pF |

If we assume parallel plates for the mesh and the anode, the expected capacitance is about 33 pF for one strip, which is lower than the measured values by a factor of 3-5.

Possible reasons:

* Additional dielectric constant of the spacers
* Field between a channel and the much larger anode plane is not perpendicular at the edges.
* The mesh plane is a mesh, not a plane. The aperture size and the wire diameter are 45 μm and 18 μm, respectively.

To Do

* Mike will discuss with John Yurkon
* Capacitance measurements for cables
* Design of the Prototype design (Wolfi/DS)
* Bob Flight, senior laboratory engineer of high energy physics group at University of Rochester, will take care of the Prototype design.
* Jack Ottarson at NSCL and Bob Flight at UR estimated the design time required. Both the estimate were 200~300 hours.
* WM and DS are preparing the test field cage. An acrylic tube with 10.5”O.D. for the body frame and several rods of aluminum and stainless steel have already been purchased.