Beam Wire Chambers

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1 Geometry

The first chamber (BWC1) is located at the entrance to the magnet, 168.5 cm upstream of the target entrance, and the other (BWC2) is 1m downstream from BWC1 , in front of the inactive degrader

Table 1: Properties of BWC1

Anode Wire	12 micron diameter Au-plated tungsten
Cathode Foils	25 micron Aluminized mylar
Anode-Cathode distance	3.18 mm
Anode-Anode distance	1.27 mm
Guard wire	8 at each end,Au-plated Be-Cu
X-plane	144 active anode wires all wires read out (no multiplexing) Wires vertical, resolution 1.27 mm
U1 and U2 planes	120 active anode wires 60 pairs of wires read out (multiplexed by 2) Wires at +45 deg and - 45 deg to vertical Resolution 2.54 mm
Active area	Horiz:17.8 cm Vertical: 5.08 cm
Total channels	144+60+60=264

Table 2: Properties of BWC2

Anode Wire	12.7 micron diameter Au-plated tungsten
Cathode Foils	8 micron Aluminized mylar (coated with Carbon)
Anode-Cathode distance	1.59 mm
Anode-Anode distance	0.8 mm
Guard wire	3 at each end,Au-plated Be-Cu
T, U and V planes	120 active anode wires 32 channels read out (central 72 wires multiplexed by 3,remaining 48 by 6) Wires at 0 deg,+120 deg and - 120 deg to vertical Resolution 2.4 mm over central 57.6 mm, 4.8 mm over remaining edges
Active area	Regular Hexagon, with 9.6 cm per side
Total channels	32+32+32=96

2 Gas System

.Both detectors use a CF4/Isobutane (80:20) mixture.They are connected in series to the gas supply. Because of the high cost of CF4, we use a gas recycling system. Without recycling, the flow of fresh gas to the chambers should be about 100 cc/min. With recycling, the fresh gas flow can be reduced by about a factor of 4.

3 Electronics

Each channel has a preamplifier, mounted on the chamber, with a gain of about .1 microvolt/electron for a delta current pulse.After preamplification, the signals go via Alpha cable bundles to a patch panel mounted on the upstream end of the detector, from where they are carried by RG174 cable to postamp/discriminators in the control room. These postamps are similar to those used on the UTC. The digital signals then go to TDC modules.