Hall C Reference

Experiment: HKS

ENGE Honeycomb Drift Chamber

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Abstract

This documents basic information of ENGE honeycomb cell Drift Chamber.

1 Purpose

ENGE honeycomb Drift Chamber (EDC) measures trajectory of scattered electron and determines position and angle at detection plane. This is mounted ENGE magnet exit.

2 Specification

EDC which cell size is 5 cm has 10 planes (xx', uu', xx', vv',xx') and x' (u', v') plane is shifted by half of cell from x (u, v) plane (figure 1). u and u' (v and v') planes are tilted by 30 degree (-30 degree).

3 Operational parameters

EDC has 5 SHV input connectors for each pair planes. Without beam, the current should be almost zero. The operational HV and threshold are decided

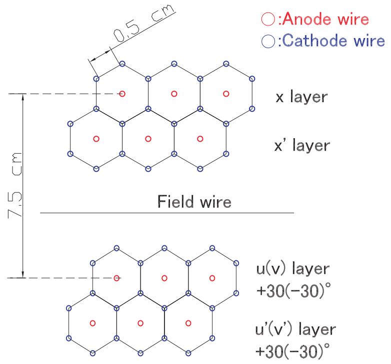

Figure 1: Wire geometry of EDC

from the result of performance test at Laboratory of Nuclear Science (LNS), Japan. As a result pf this test, we got total position resolution of 210 μm. The efficiency is almost 100% if -HV is above 2100 V and will decrease if threshold is above 4.0 V.

HV	-2200 V
Threshold	2.0 V
Gas content	Ar/C_2H_6 50:50

Table 1: Operational parameter for EDC

The signals from anode wires go into Nanometric N277L cards for preamplifying and discriminating. There are 70 cards for EDC, 35 on top side and 35 on bottom side. N277L card need both +5 and -5 power input. The voltage are supplied by two Acopiann power supplies respectively. The output signals from cards go into F1 TDCs via 33 ft. flat cables.

4 Tracking Parameter

These are the main parameters for EDC.

`edc_tdc_min_win`, `edc_tdc_max_win`: In edc.param . Select a good hit in this window.

`edc_layer_time_zero`: In edc.param . Set time zero of ALL cards (total 70 variables).

`edift_coeff`: In edriftcoeff.param . Constants for 3-order polynomial to calculate drift distance from drift time. 0-order, 1-order, 2-order and 3-order of ALL cards (total 70 variables) are required.