

Coordinate Detector Budget

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Coordinate Detector (CD) Basic Configuration

- New EM calorimeter (NewCal) using 1728 HERA-B middle section blocks ($5.59 \times 5.59 \text{ cm}^2$).
- Reasonable size for NewCal ($134 \times 402 \text{ cm}^2$) keeping aspect ratio of $\sim 1 : 4$ for GEP-V kinematics.
- CD geometry: vertical plane of ($0.3 \times 3 \times 134 \text{ cm}^3$) or ($0.5 \times 3 \times 134 \text{ cm}^3$) scintillator strips.
- Total of **3 planes** for the CD.
- Light output to PMT via 1.5 – 2.0 mm diameter multi-clad WLS fibers through central hole along length of the strips.

Number of Channels for CD

- Required total number of channels for 3 planes of CD w/ 3 mm and 5 mm thick scintillators:

Item	3 mm bars	5 mm bars
Number of scintillators (#)	4020	2412
Length of scintillators (m)	5387	3232
Length of WLS fibers (m)	10774	6464
Number of readout channels (#)	4020	4824
NINO frontend boards (#)	251	302
DAQ CPUs (#)	8	8

Cost Estimate for CD

- Cost estimate (in k\$) for 3 planes of CD w/ 3 mm and 5 mm thick scintillators:

Item	3 mm bars	5 mm bars
Scintillators	70	70
WLS fibers	28	17
NINO FEE boards	109	130
DAQ CPUs	80	80
HV units from CDF	No cost	No cost
Detector frame	~25	~25
Cables/Connectors	~30	~30
Estimated total	342	352

- Total cost of 3 planes of CD w/ scintillators within the SBS budget allocation for CD based on 24 GEM modules.