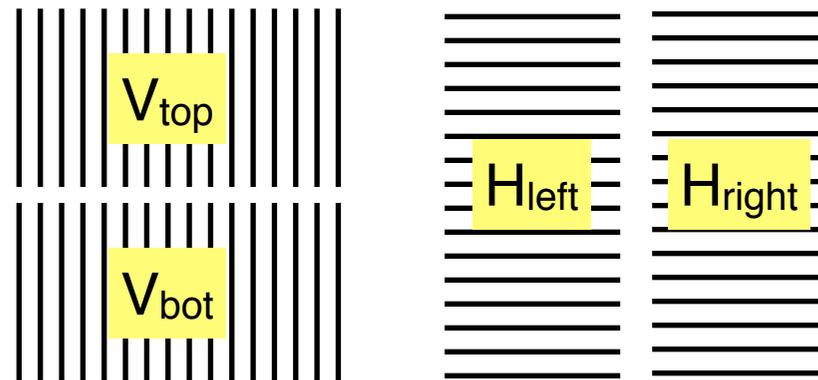


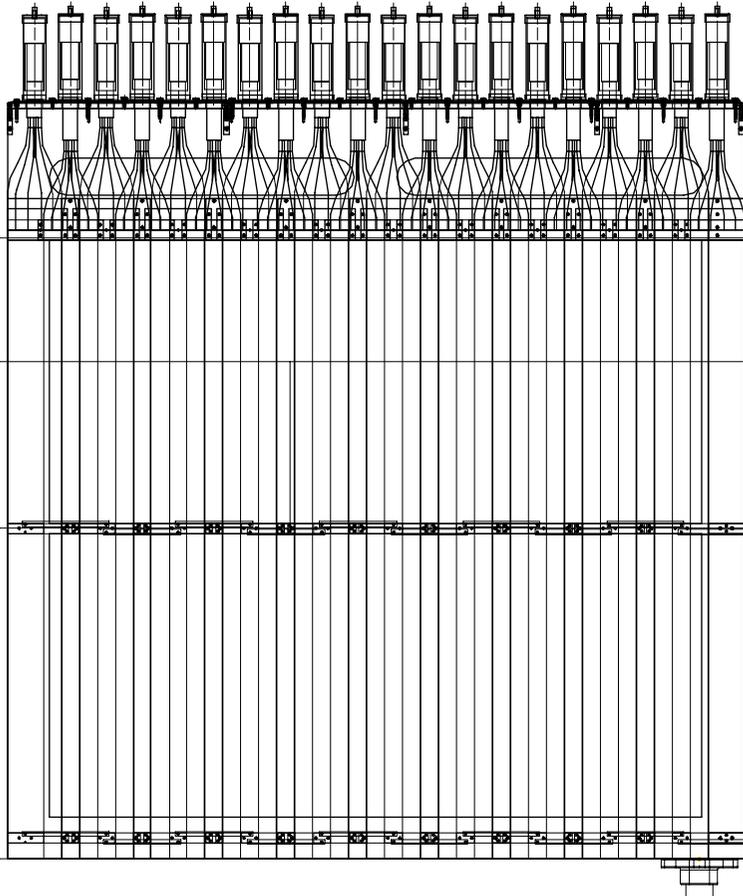
## Hodoscope concept from proposal for Stations 1 & 2



	scint length (cm)	array width (cm)	#PMTs	array width /16 (cm)
1V	69	99	16	6.2
1H	50	137	16	8.6
2V	88	170	16	10.6
2H	85	175	16	10.9

*issues: high rates at edges (0-deg  $\mu s$ ) and stray fields*

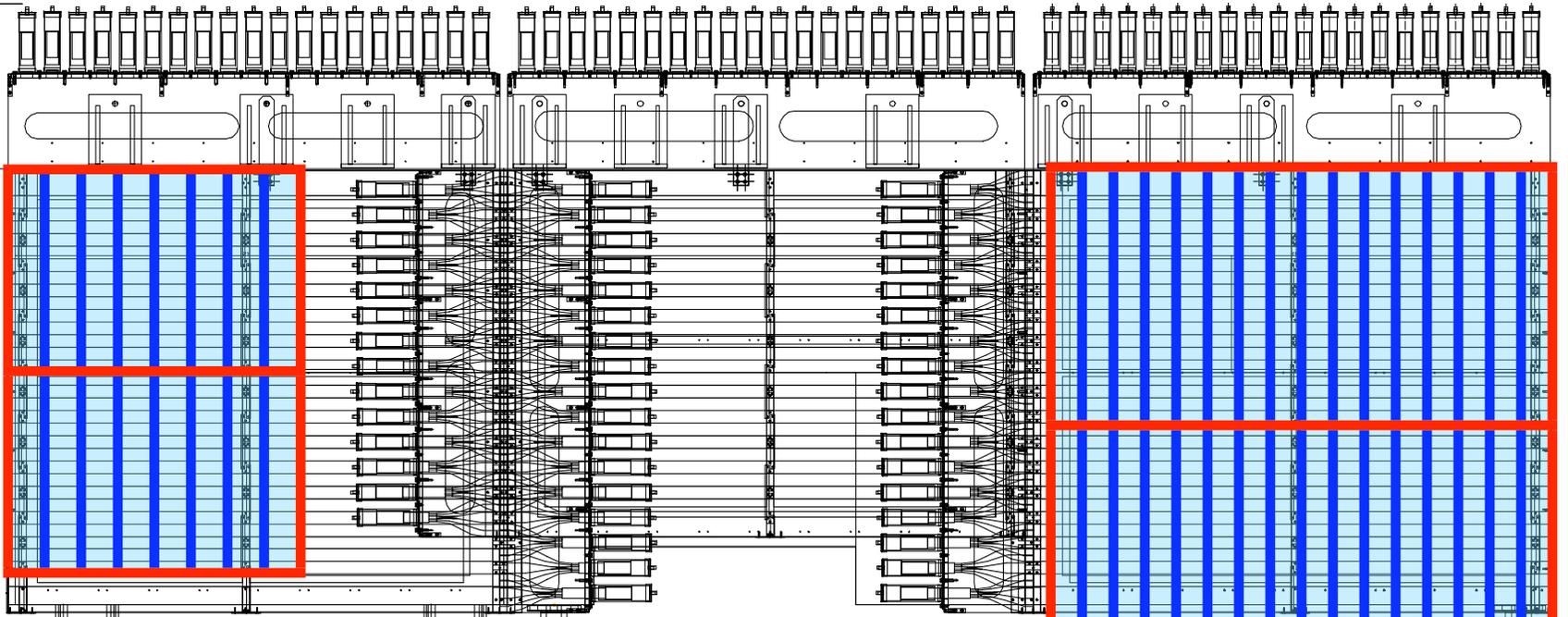
## HERMES Muon Hodos



	scint length (cm)	array width (cm)	#PMTs
1V	152	169	19
1H	169	152	17
2V	132	178	20
2H	178	126	14
3V	152	178	20
3H	178	152	17
4V	90	394	45

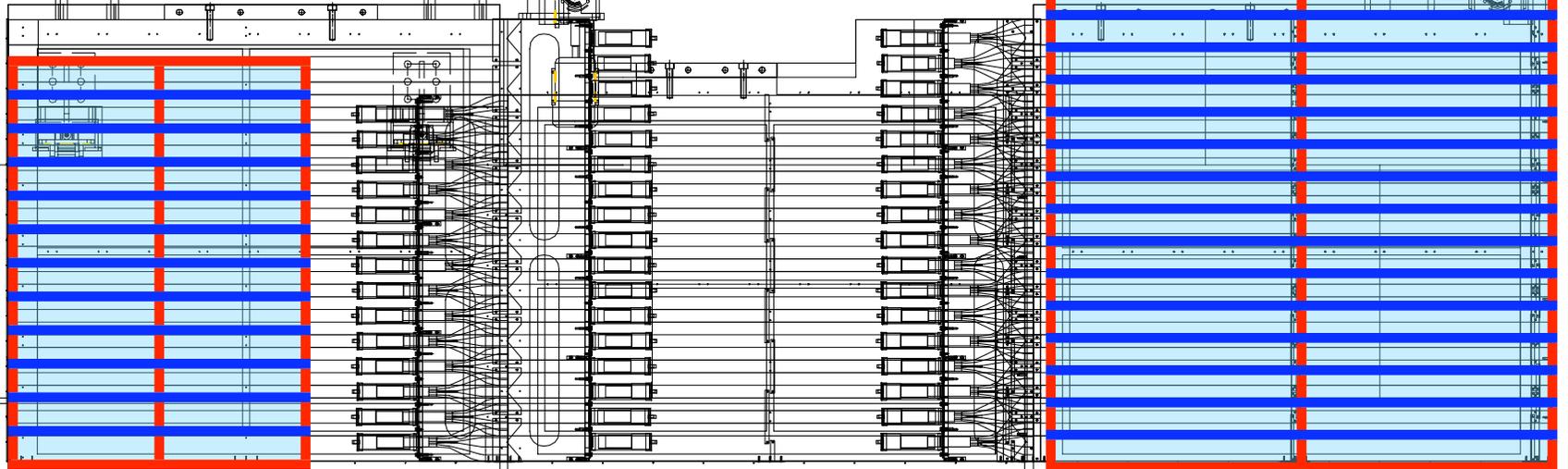
- **2 copies** of each array (HERMES top/bot)
- scintillator bars all **13 cm wide**, staggered with **1/3 overlap** → **4.3 cm** granularity
- scintillators **1/4" thick**, x 13 cm width = area-match to PMTs' **1.25" diameter** cathodes
- PMTs from ARGUS (free! 😊), old but w  $\mu$ -metal & iron shields

22.28 [57 CM.]



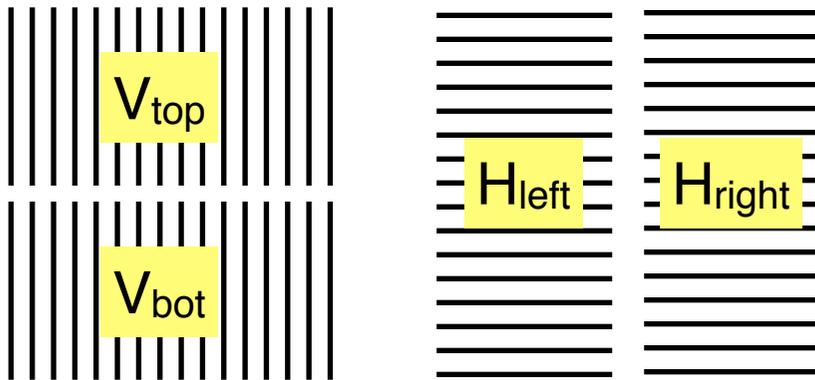
← 1 meter →

186.29 [473 CM.]



29.37 [75 CM.]

## Basic Strategy for Stations 1 & 2



- **rates**: at edges, 50 MHz for 10 cm wide paddle! (saturates beam rate)
  - critical factor for granularity
  - use **narrower paddles at edges**
- **scintillators available**: plenty of material from HERMES  $\mu$ odos
  - back at UIUC in March/April
  - **resize** where necessary
  - refabricate **lightguides** where nec
- **PMTs**: PMTs + bases available from HERMES (H1, H2 and ARGUS tubes from uHodos), G0, ZEUS (w/out bases)
  - **use as many as possible** given quality & rate limits
  - **buy new** or **rewire bases** for high-rate / high-field paddles only
- **supports**: have to be designed and built
- **manpower**: Illinois & ACU (both: technician + undergrads ... anticipated UIUC grad student would work on software instead)

## Critical-path Decisions

- ① **Hodoscope granularity**: need to know rates at edges
- ② **PMTs**: need for new tubes and/or bases depends on rates, fringe fields, and quality of existing tubes & bases

*need final FMag design and Monte Carlo thereof  
→ how reliable / final are current estimates?*

- ③ **frame design**: need layout of front region ...  
ideally a CAD file of the spectrometer for all to use

## Task List

- **PMTs and bases**
  - **test existing**: for quality, max rates, & max fields possible
  - **purchase new** as necessary
- **Scintillators**
  - **resize** as needed (milling, polishing, rewrapping)
  - **test existing materials** for radiation damage
- **Lightguides**: **resize / refabricate** as needed
- **Supports**: design and fabricate
- **Manpower**: figure out distribution between ACU and UIUC
  - both have necessary capabilities for PMT, scint, lightguides
  - ACU: coordinate with S3 and S4 work
  - UIUC: John Blackburn good candidate for support design
- **Rough schedule**: testing in summer, fabrication in fall