

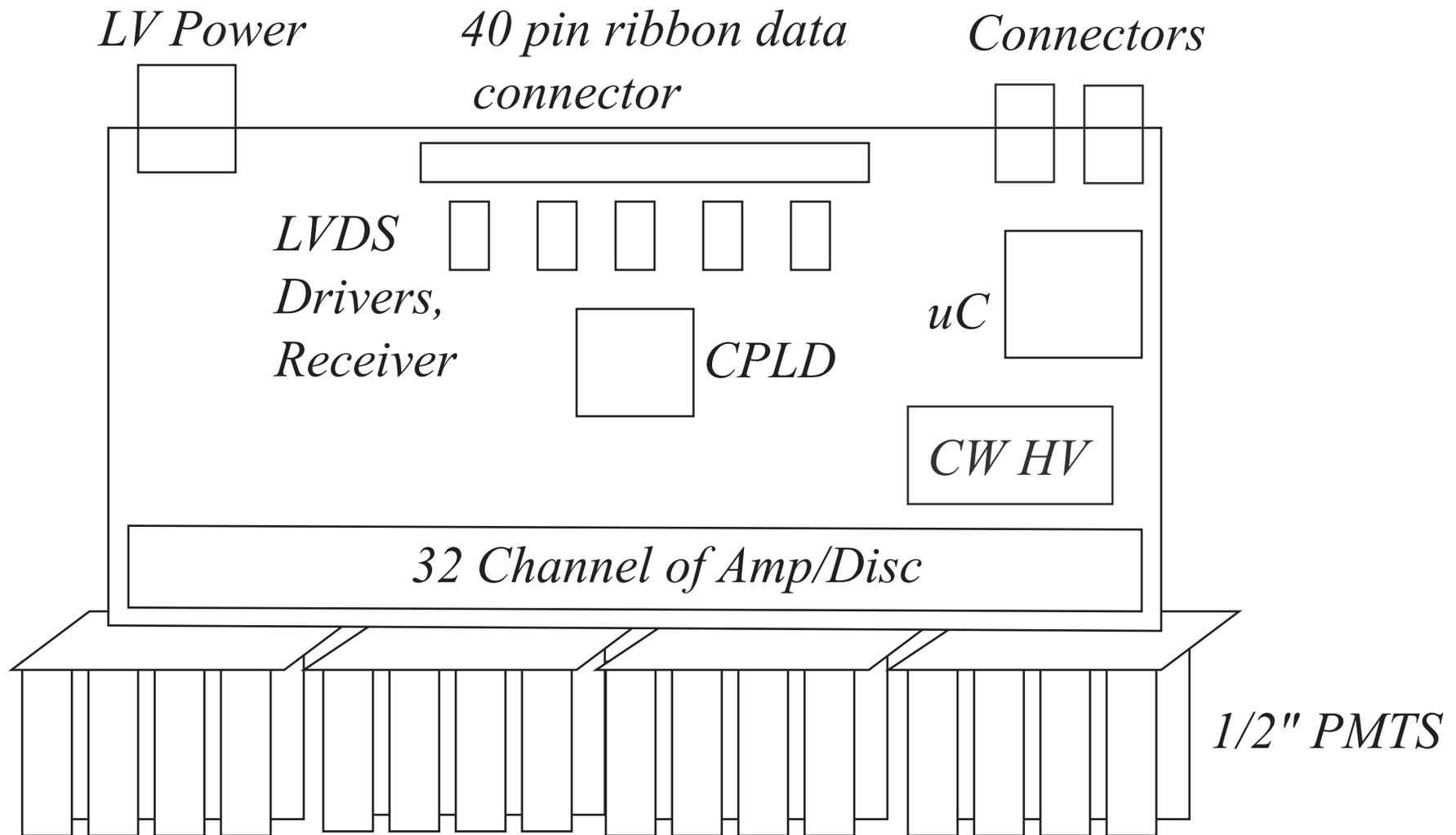
RICH Electronics

Mark Messier (for Sten Hansen...)

MIPP@FNAL 18 May 2002

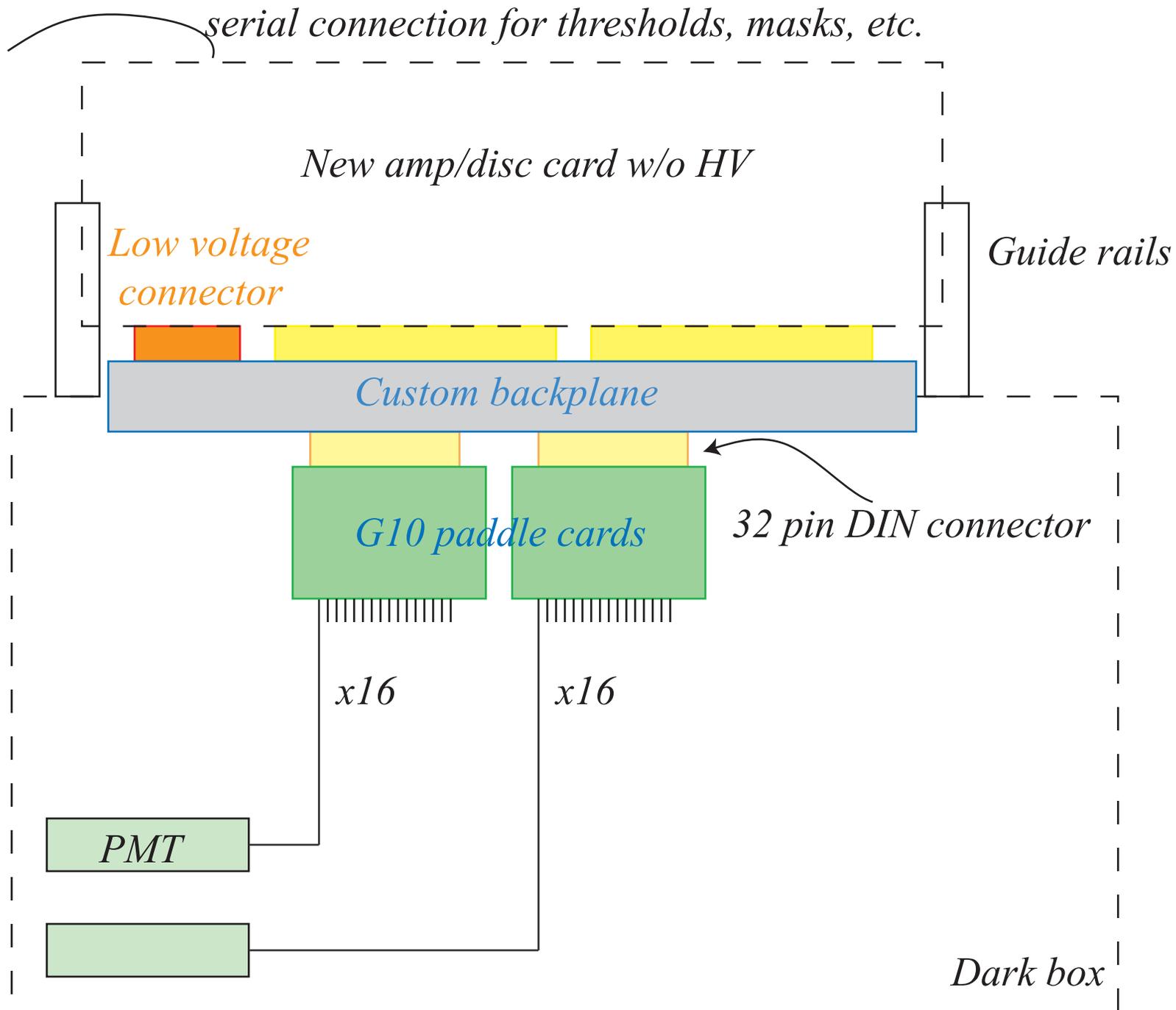
- Original design*
- Original design meets FEU-60*
- HV options*

Proposed RICH Counter Card (MIPP,CKM)



*This system would require desoldering all of the FEU-60 PMT's
Opted instead to make use of existing HV distribution system
Eliminates Cockcroft/Walter HV circuit and 8 PMT adapter card*

RICH Electronics Layout



RICH Electronics Summary

- *Sten et al. will build 32 channel cards so that they fit in the existing cage*
- *These will not have the on-board HV generation circuits*
- *The boards will have on-board microcontroller for setting thresholds, masks etc.*
- *Boards will be daisy chained together via serial data connection*
- *Schematics are being updated for the HV changes (and others)*
- *Should be submitted to the layout group sometime next week*
- *DIN connectors in hand - low voltage connectors not found...*
- *Maybe some issues with grounding (PMT anode shielding, HV return, and paddle card share a common ground). Try prototype - if too noisy look into resoldering connections to paddle card.*
- *Readout card design is not changed. Layout is ready. Cards can get built.*

Plan for Testing

- Boards will be tested at Harvard*
- Probably makes sense to build test system which mirrors DAQ:*
 - Efficient use of development time*
 - Spread DAQ expertise around collaboration*
- Ron and Andrei will coordinate loans of equipment*
- Development could begin soon using MINOS front end electronics until RICH electronics are available*

RICH HV System

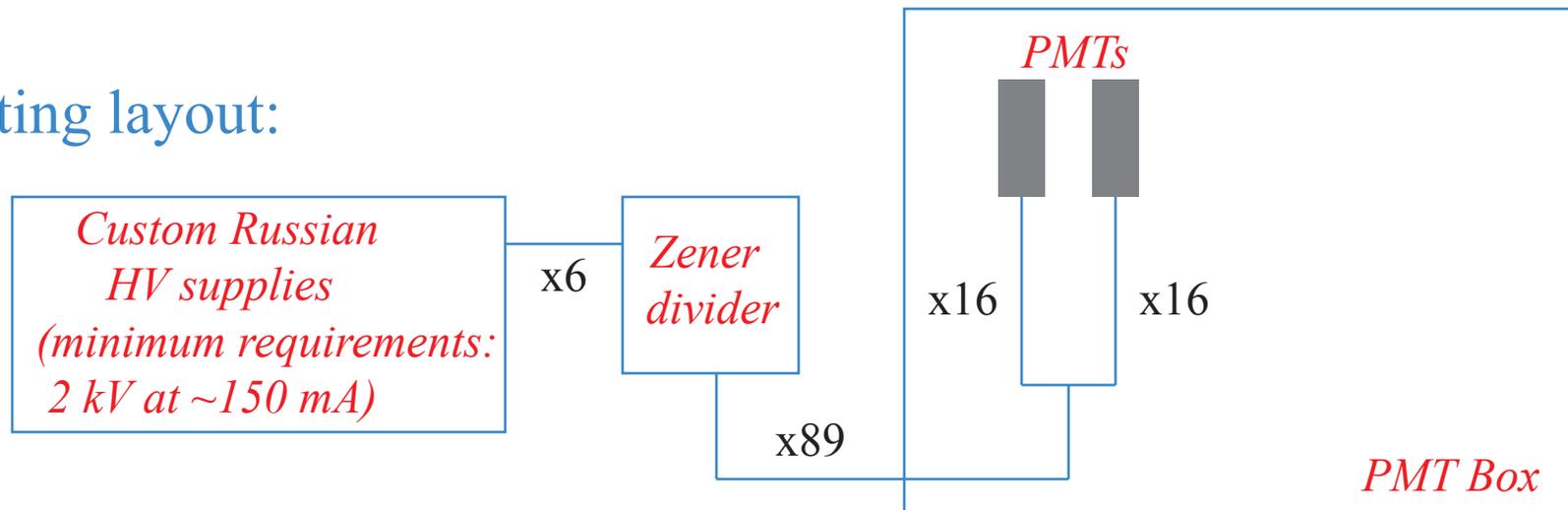
HV Requirements:

FEU-60 Tubes: ~ 2.0 kV at 0.2 mA /tube

HAMA-R760 Tubes: $\sim < 2.0$ kV at 0.3 mA/tube

\Rightarrow 1 row of 32 tubes draws ~ 10 mA -- not many systems can meet these requirements

Existing layout:



HV Options

- 1) Use existing custom Russian HV system*
 - worked for PMT testing*
 - but, limited spares, parts, and support*
 - no computer control and monitoring*
 - mixed SELEX experience*
 - Dangerous? Approved once before*

- 2) Find supplies to replace the 6 Russian supplies*
 - not many (none?) off the shelf systems can do 2kV@150mA*

- 3) Replace 6 supplies with 89 HV channels. 2kV@10mA*
 - There is a CAEN system which could do this. Single SY527 mainframe loaded with 10 A753 modules (9 channels each)*
 - Mixed experience with CAEN*
 - Not available through FNAL PREP, but support is growing. CDF uses a CAEN system for Silicon detector*
 - Would have computer control and tools for this exist (eg. CERN)*
 - Cost? Still looking into it. My guess ~\$10k*

- 4) One could look for a system to supply just 16 channels.*
 - Requirements still pretty hard to meet (2kV at 5 mA)*
 - Requires modification to existing distribution system*