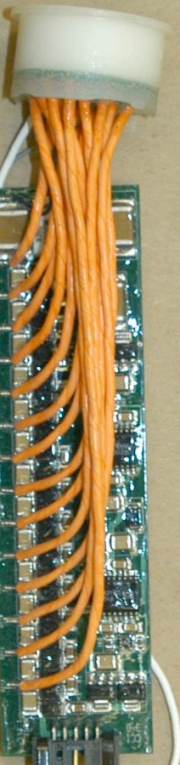


# FCAL Cockcroft-Walton PMT base

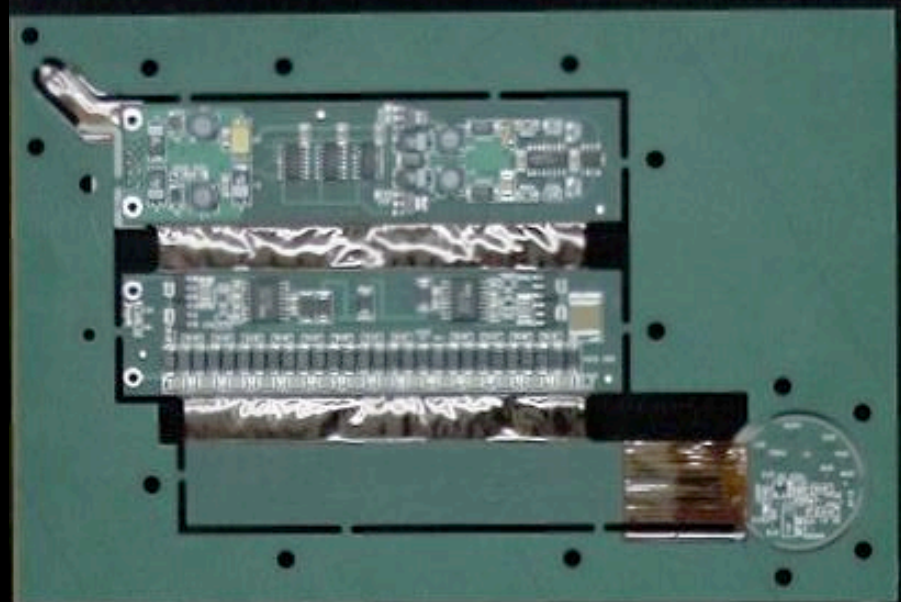
E852



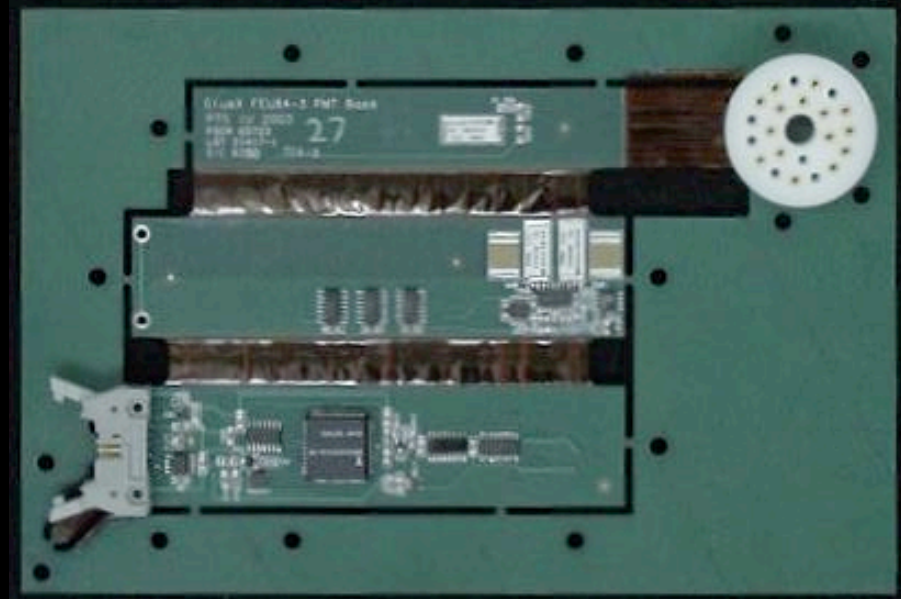
GlueX



RadPhi



100 Prototypes constructed at IU

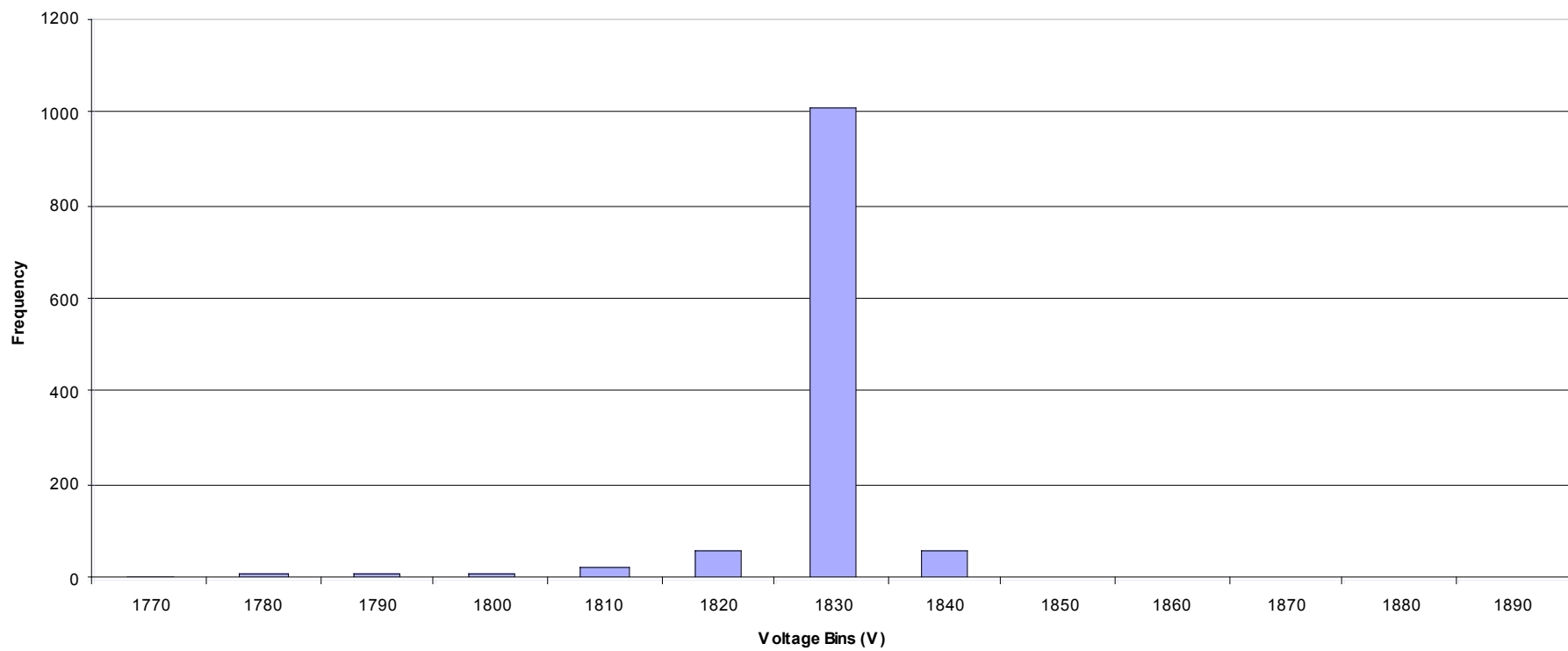


Selective assembly robot

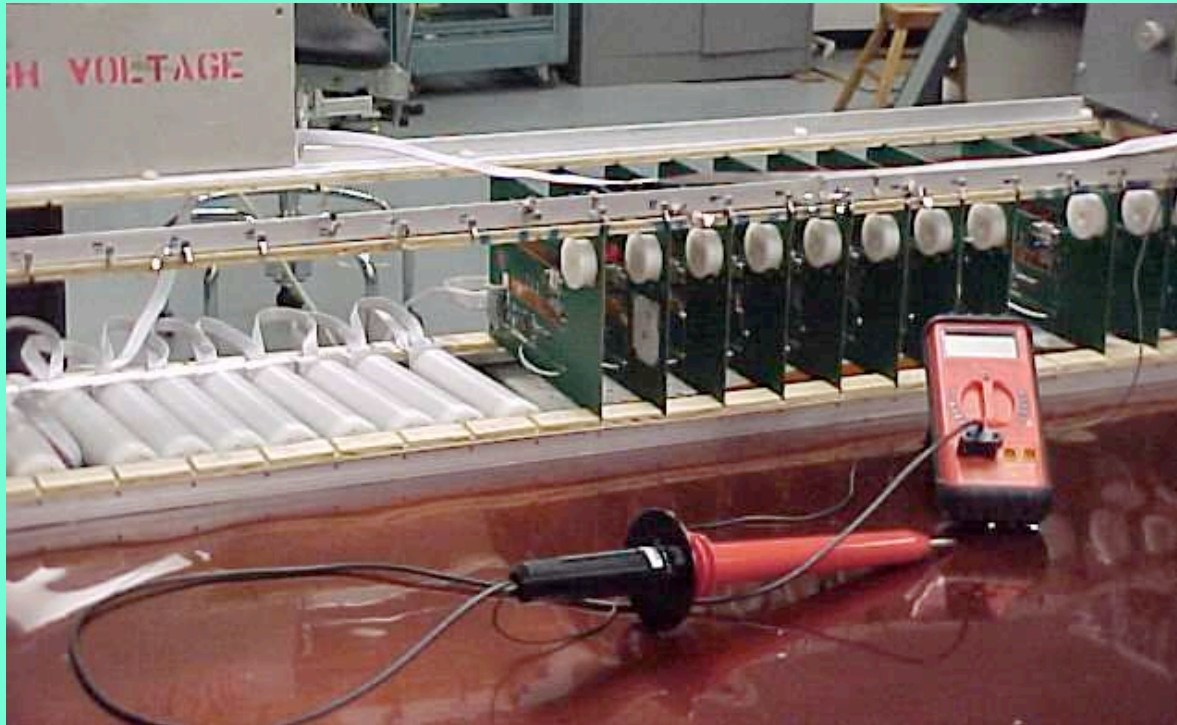
# CAN bus:

- Originally developed by Bosch for vehicles
- Lots of industrial apps
- Differential serial
- Good noise immunity
- Lots of silicon available
  - 100s of  $\mu$ controllers with integrated CAN
- 11/29 bit addressing:
  - base id
  - hole id
  - row/column

**Histogram of Returned ADC Values of a Typical Base (used 884f)**









675 PMTs tested so far, 3% failure

# Production:

- settle on PMT
  - FEU84-3, FEU115, other?
- money
- minor board revisions:
  - lower power
  - current monitor
  - temperature monitor
  - zero ohm jumpers for diagnostics
- equipment:
  - paste stencil
  - aqueous cleaner
  - coating sprayer
- people:
  - one or two techs
  - engineer/physicist