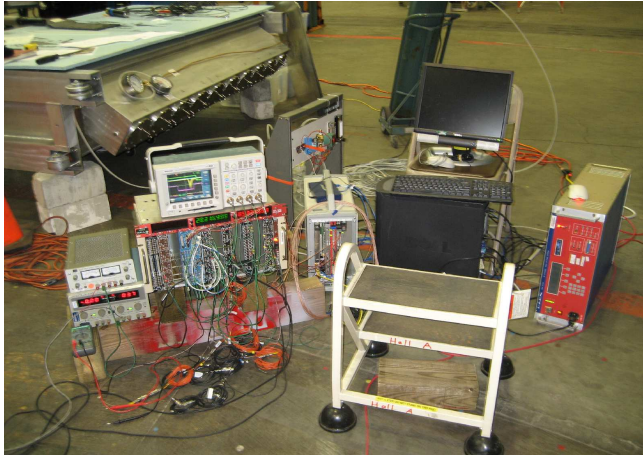


Fine Mesh PMT Tests

by W. Boeglin and B. Zihlmann

August 21, 2008

Fine Mesh PMT setup



- Computer
- VME crate
- NIM crate
- HV module
- LV module
- Scope

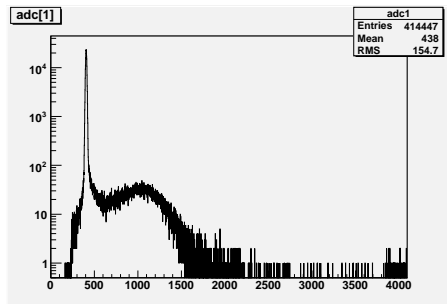
Fine Mesh PMT in BIG-BITE



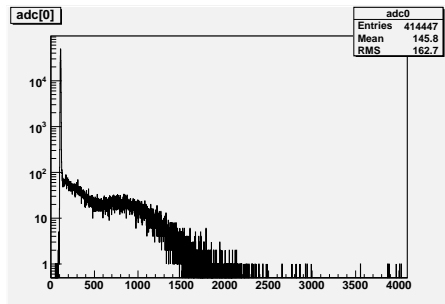
- measure PMT performance in magnetic Fields of 0.5 T, 0.8 T, 1.0 T and 1.2 T
- Light from LED coupled into PMT through fiber light guide.
- LED light intensity easily variable from 1 photon to 1000s
- LED pulse very fast <2ns
- LED pulse rate 1000 Hz or less during data taking.

Single Photon Response

XP2020



Fine Mesh PMT H6614



Gain of fine mesh PMT about $4 \cdot 10^7$! (1.5 in active area)
1.0 in tube died during the test.
⇒ only 1.5 in tube tested!

Werner will write full document about the test results!

Findings:

- H6614 operates even at 1.2 Tesla
- Signal amplitude reduced in the magnetic field (~ 100)
- Maximum signal not for PMT || to B field but at about 40 deg.
- Steady signal increase from 0 deg. to ~ 40 deg.
- Fast decrease beyond ~ 40 deg.
- No signal for perpendicular fields. (even low fields $< 1 \text{ KGaus}$)