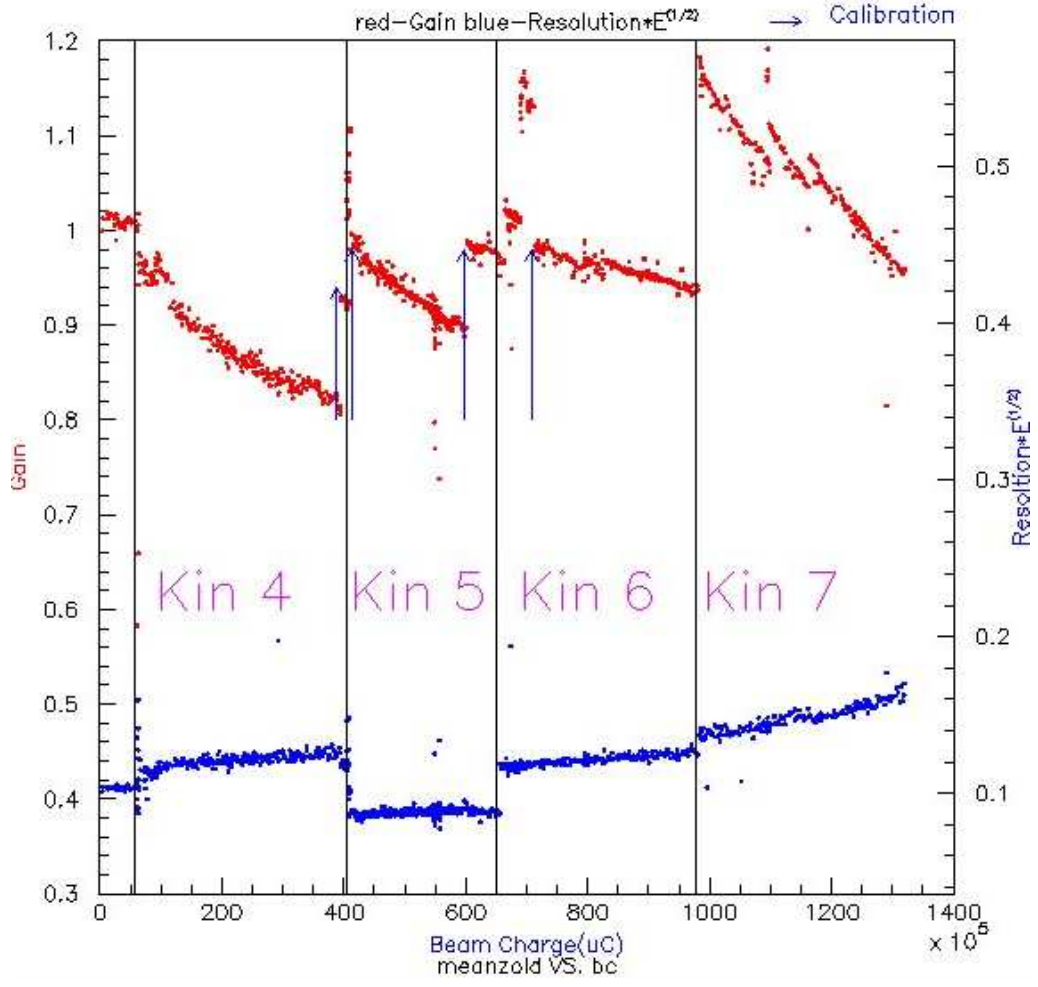
BigCal UV Light Curing

Wei Luo

BigCal Gain

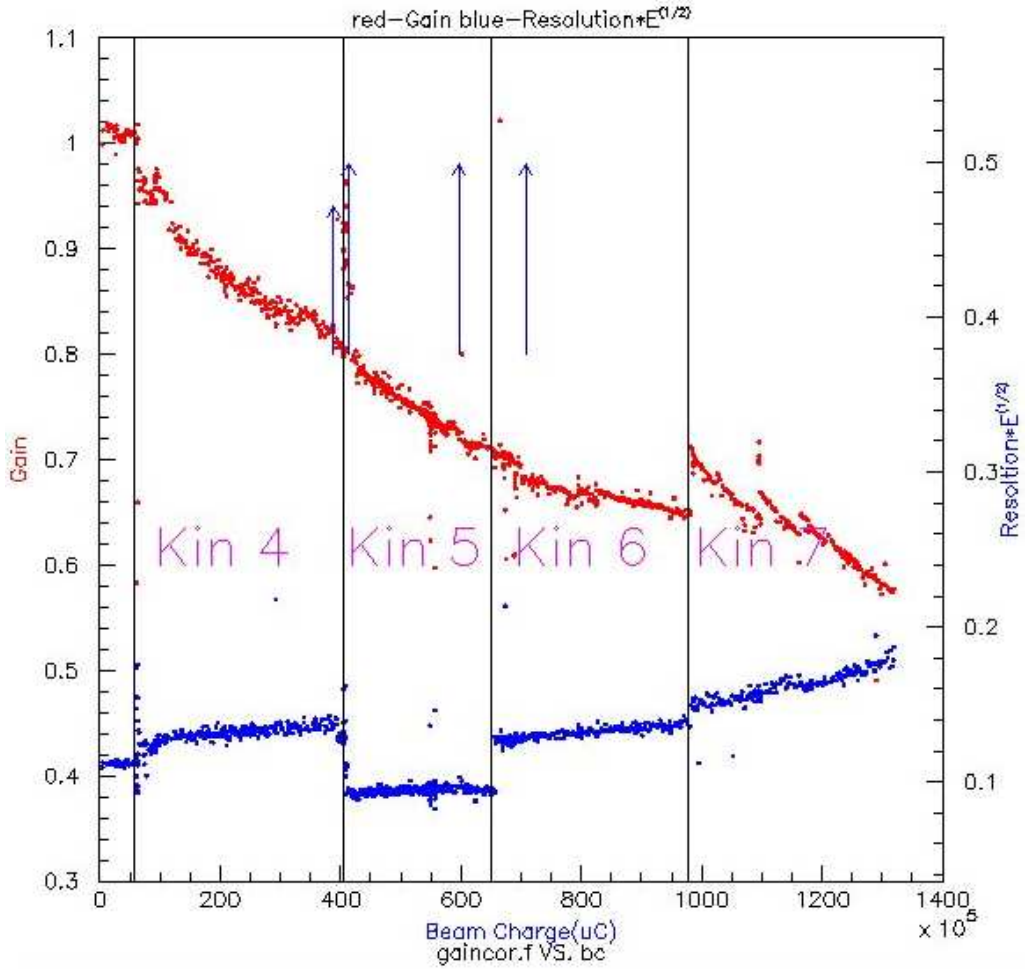


The gain and resolution till Jan. 2008.

(1) $$\frac{\delta}{E} = A + \frac{B}{\sqrt{E}} + \frac{C}{E}$$

- Gain VS beam charge

BigCal Gain



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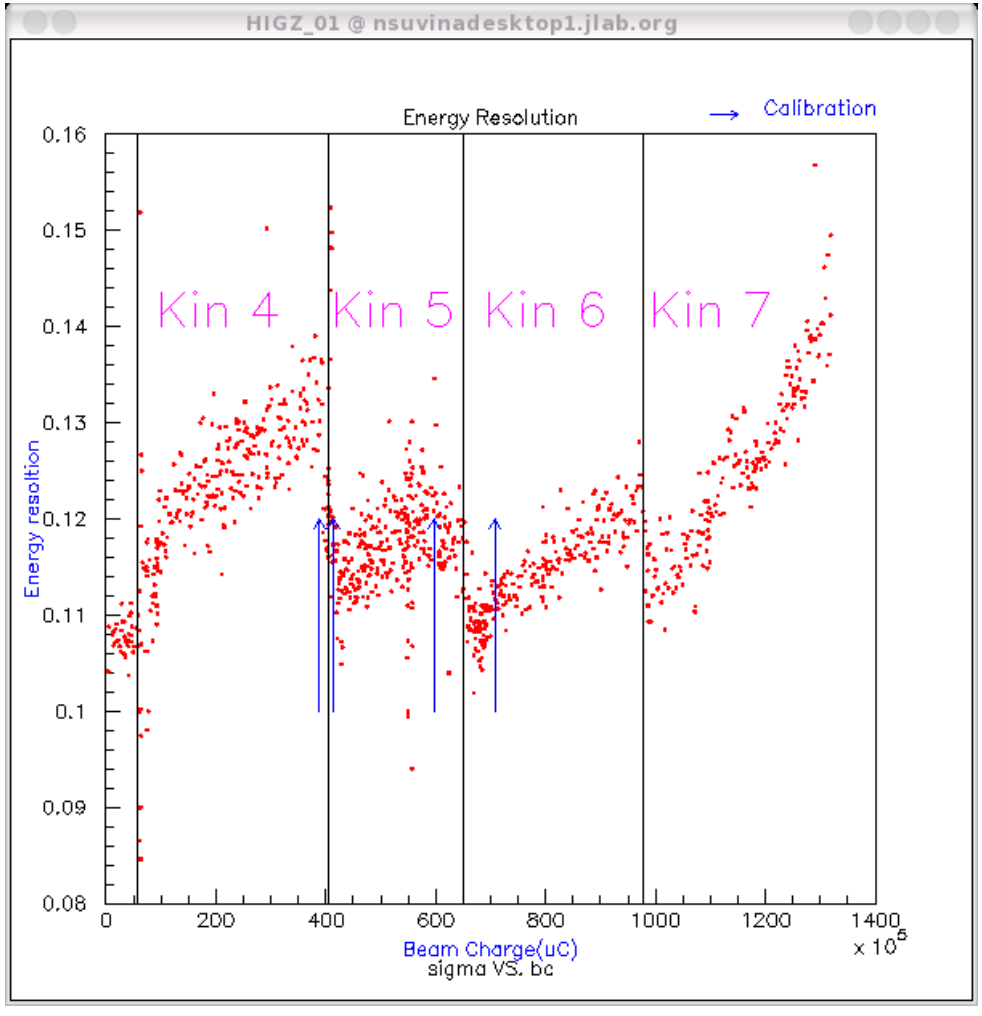
- Corrected Gain VS beam Charge

BigCal Gain



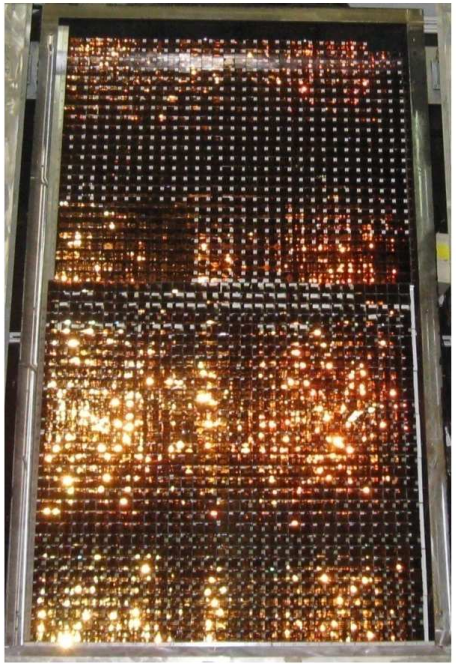
The gain and resolution till Jan. 2008.

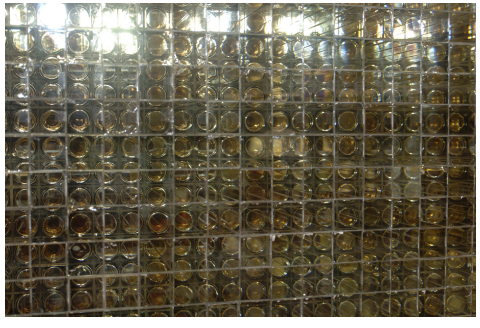
(1) $$\frac{\delta}{E} = A + \frac{B}{\sqrt{E}} + \frac{C}{E}$$

- Gain VS beam charge
- Corrected Gain VS beam Charge
- energy resolution without election energy correction

UV curing

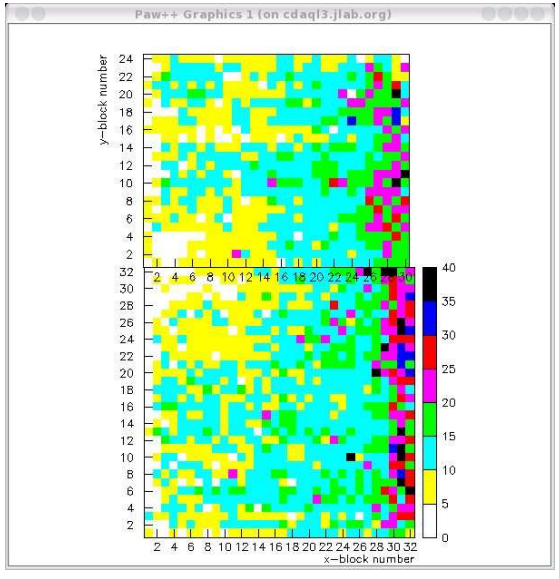
The UV light box stayed at 4 positions, each postion for 3.5, 3.25, 2.75, 2.33 days.

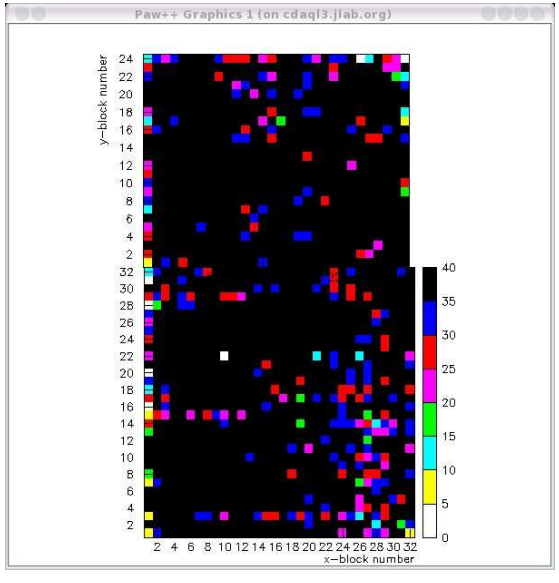




- Before and after curing

UV curing





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- Before and after curing
- LED monitor system

(2) $$\frac{ADC_{before}}{ADC_{after}} = \frac{7.09}{45.48} = 6.41$$

UV curing

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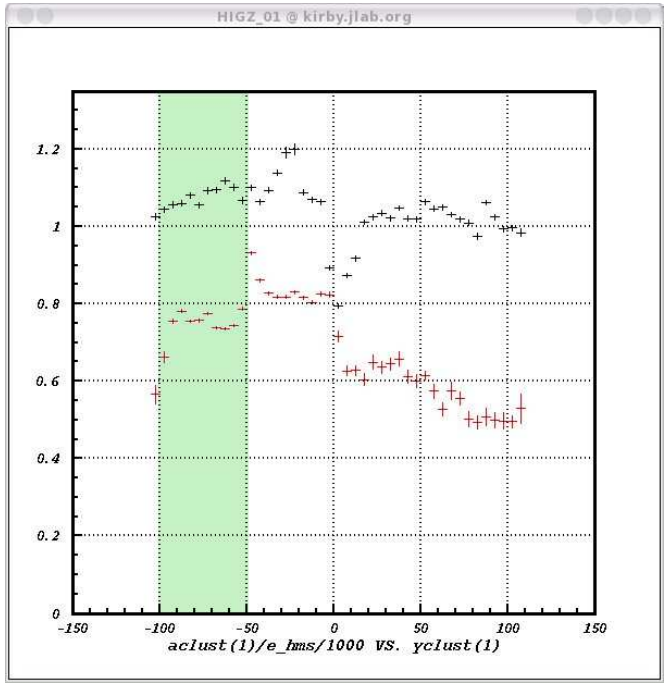


- Before and after curing
- LED monitor system

(2) $$\frac{ADC_{before}}{ADC_{after}} = \frac{7.09}{45.48} = 6.41$$

- Elastic electrons gain

  with the same HV, the gain recovered about 30% or more

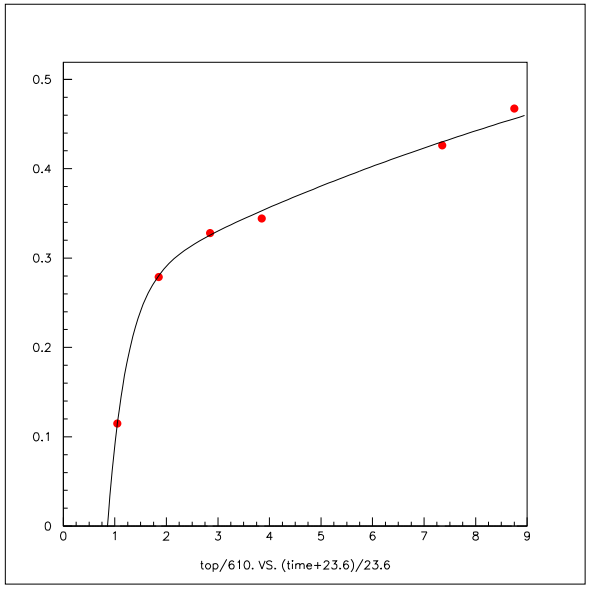
  The energy resolution at end of RCS experiment >19% for Protovino part glass.(Ee=2.3GeV)

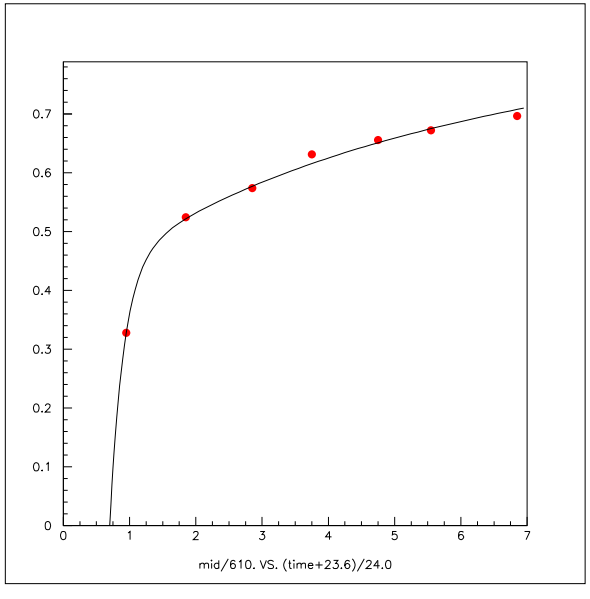
  The energy resolution at after curing 14%.(Ee=1.2Gev)

  All with 4 absorber

  Best resolution for 4 absorber is 11%, and one absorber is 7%

prototype data fit





Two lead glass blocks were used to do the prototype UV curing. One was uniformly irradiated and the other was taken out of BigCal in Jan. 2008.

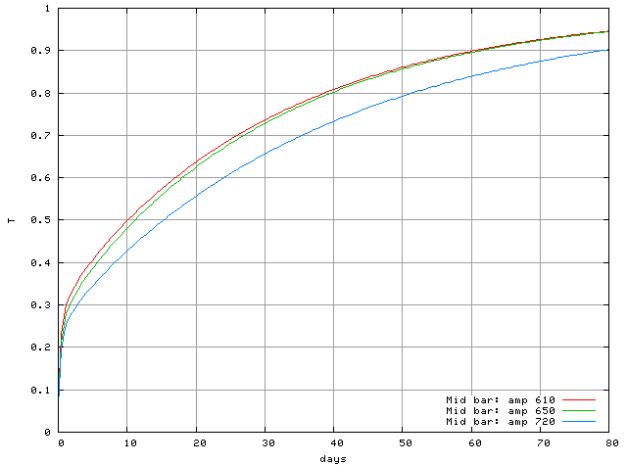
Fit function:

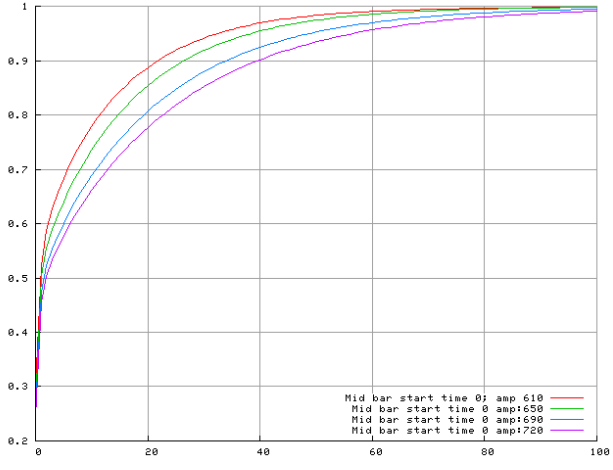
(3) $$T(t) = 1 - Ae^{-\frac{t}{B}} + \frac{C}{t+D}$$

Where T(t) is the transparancy, t is the curing time in days,A,B,C,D are fit paramters.

- fit of data in 6 days

prototype data fit





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- fit of data in 6 days
- prediction of curing curve