

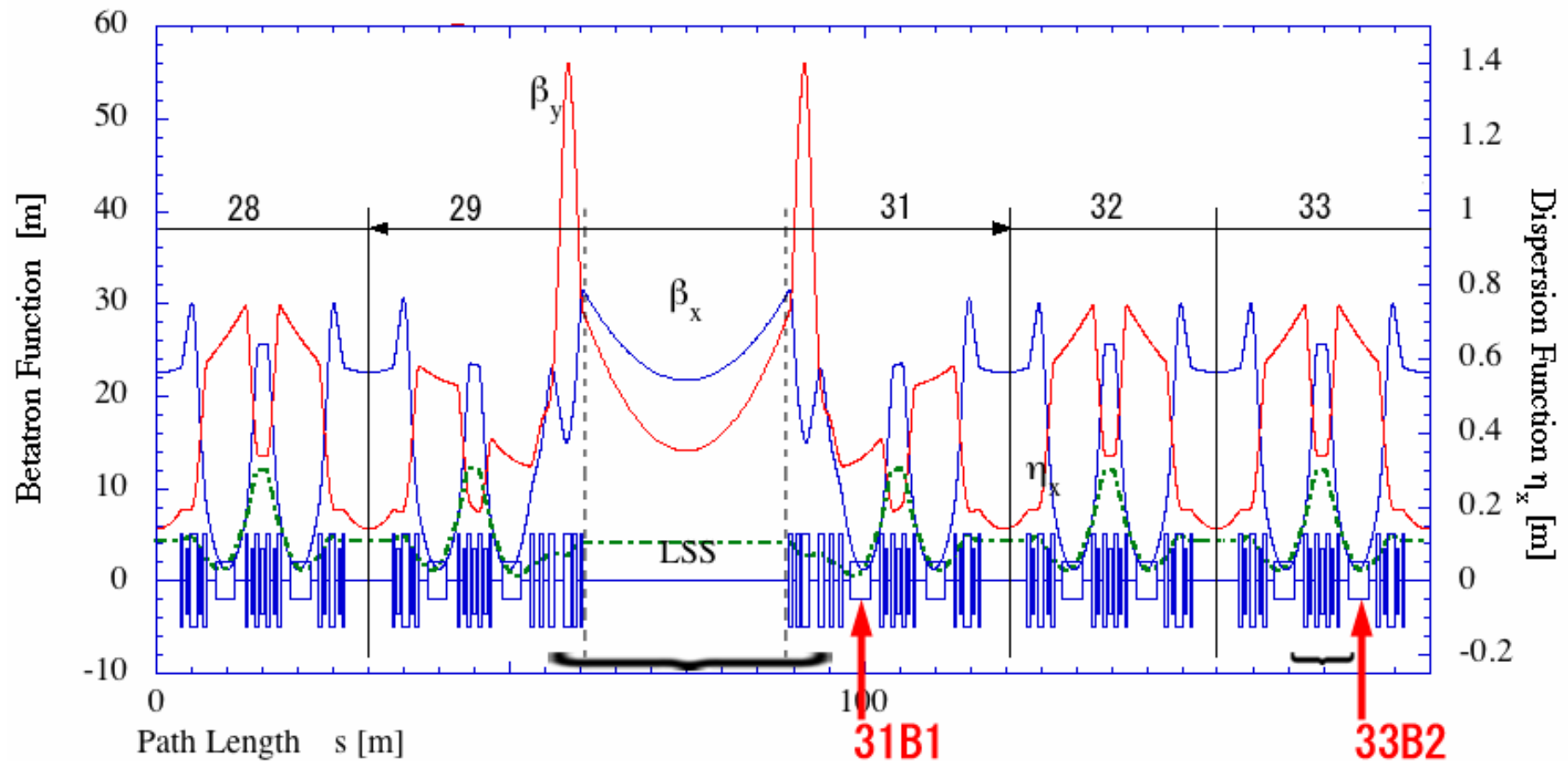
Design of new tagging system for very high energy photons

T. Yorita and S. Date'

- 1. Recoil electron behavior calculations**
- 2. New chamber design**
- 3. High energy gamma tagging test**

- 1. Recoil electron behavior calculations**
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Optics and Magnets

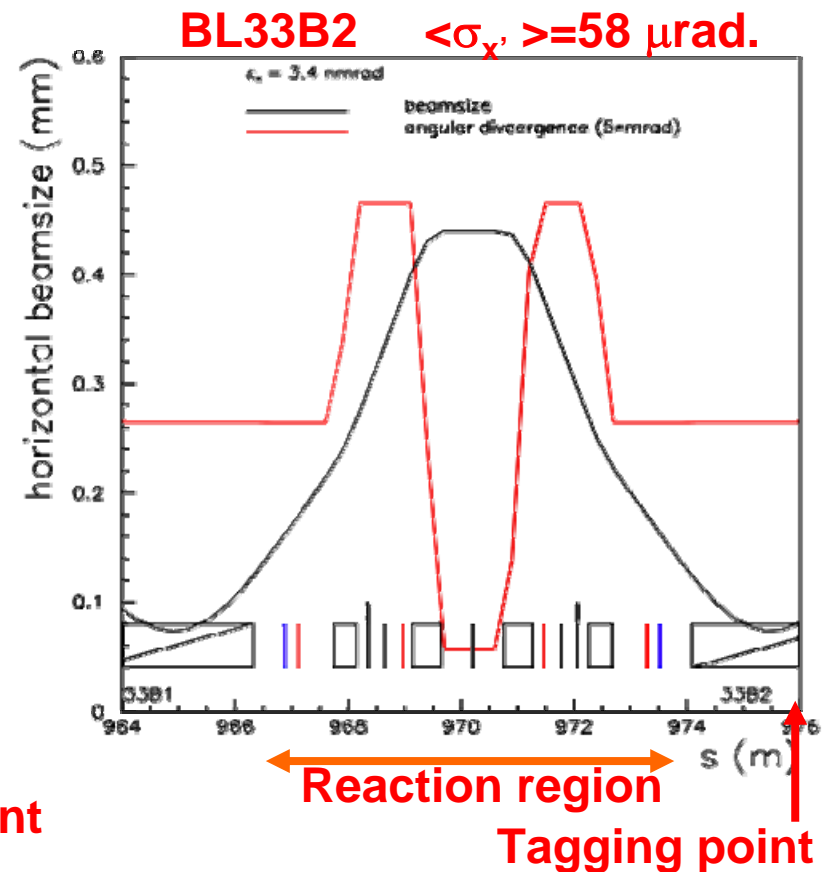
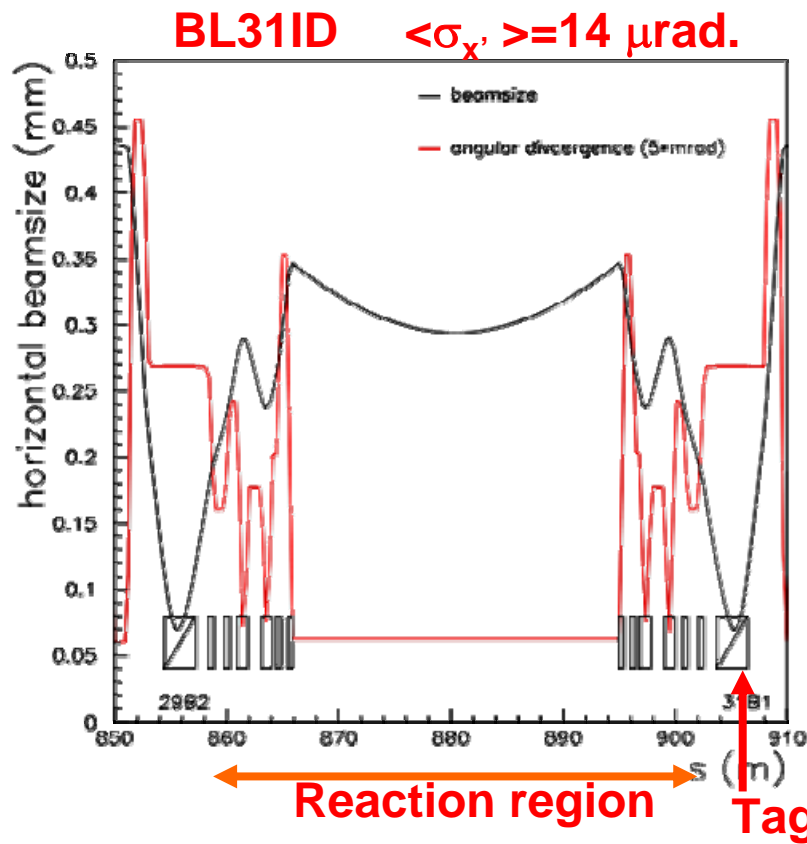


question:

Tagging resolution?

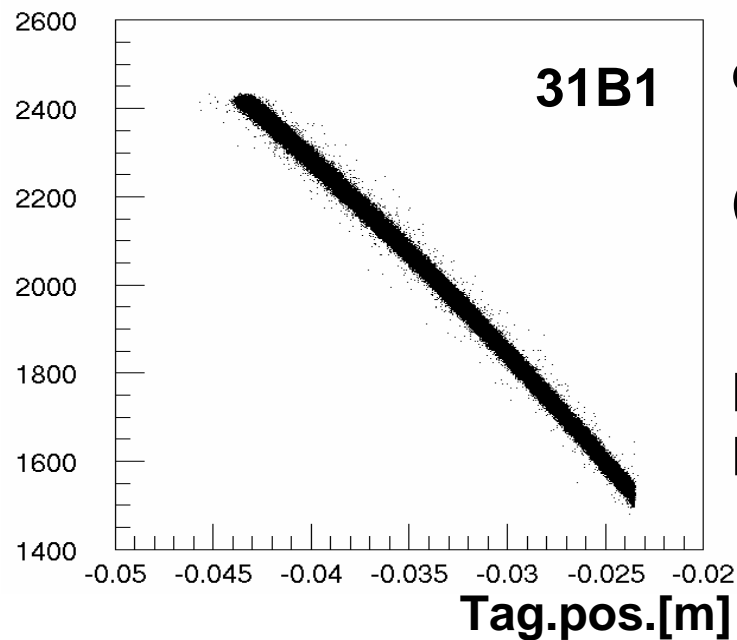
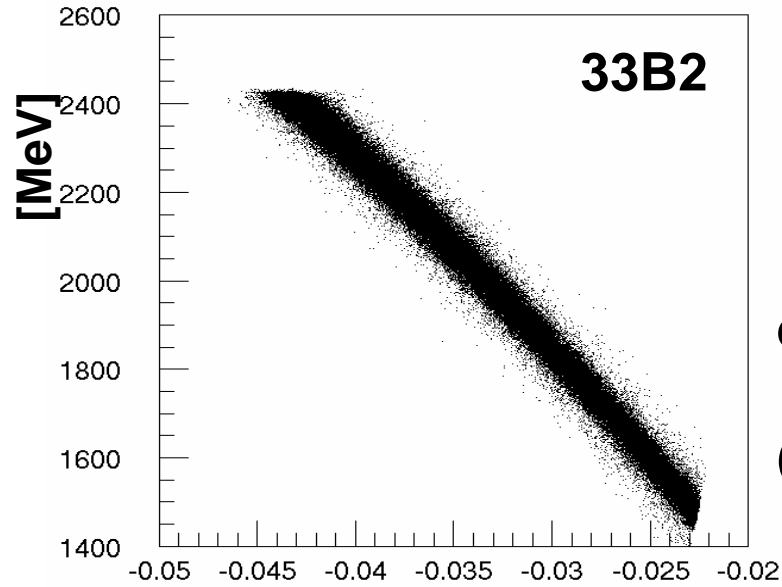
Can low energy recoil electron survives Q magnets?

Calculation of recoil electron behavior



- LEP emits in reaction region by injected laser or X-ray
Focus point is middle of reaction region
- Trajectories of recoil electrons are tracked by Runge-Kutta method

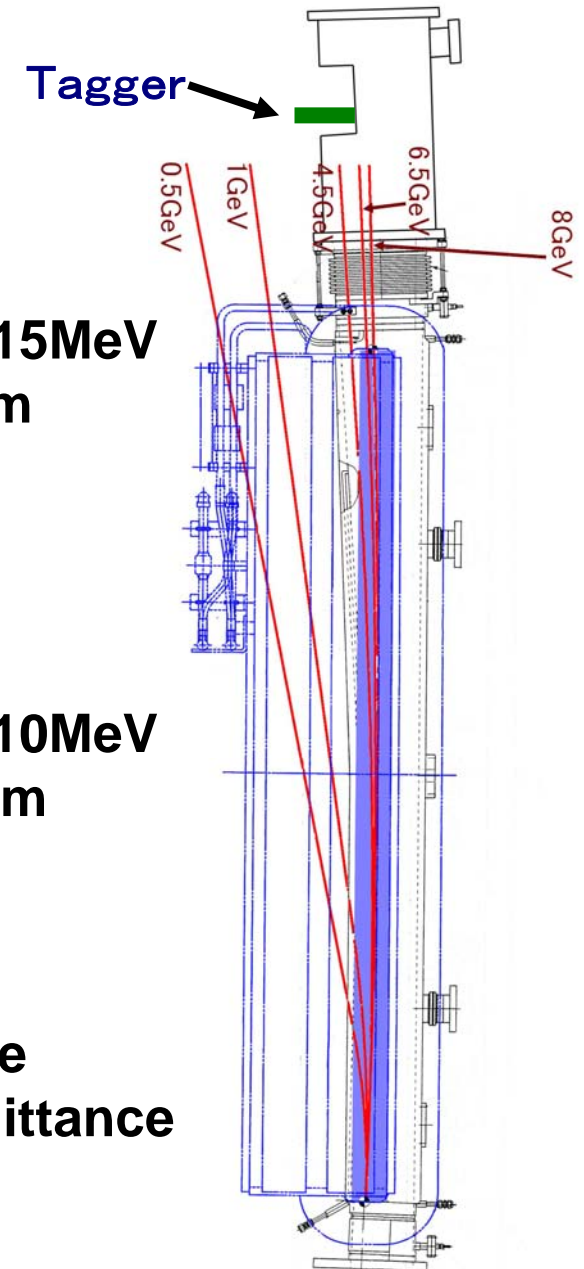
Result for LEP with 350nm laser



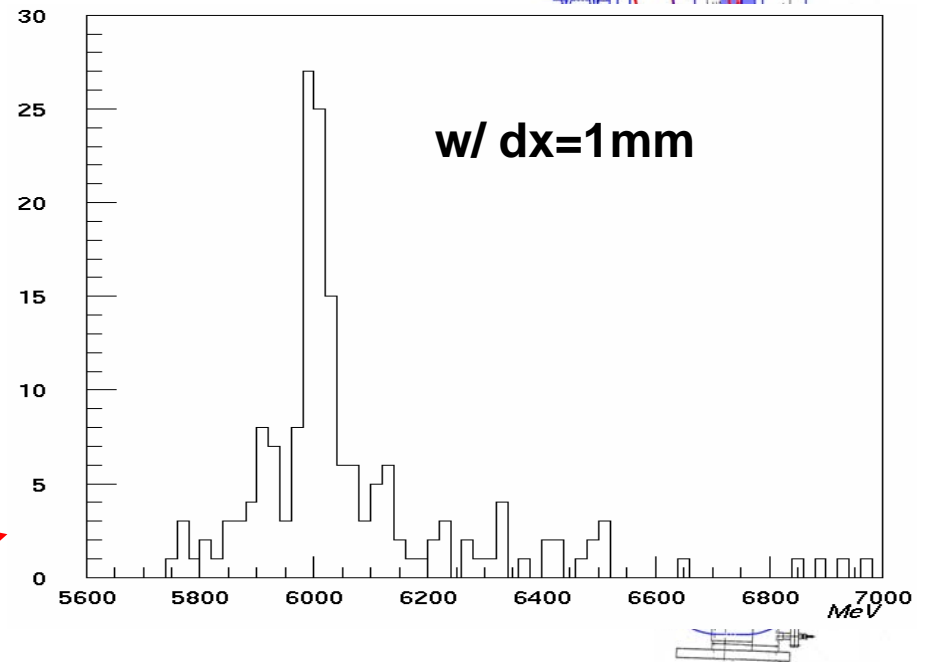
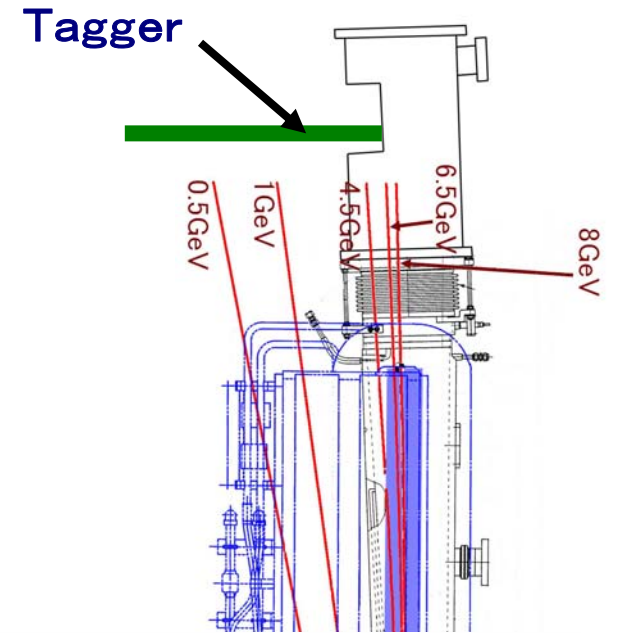
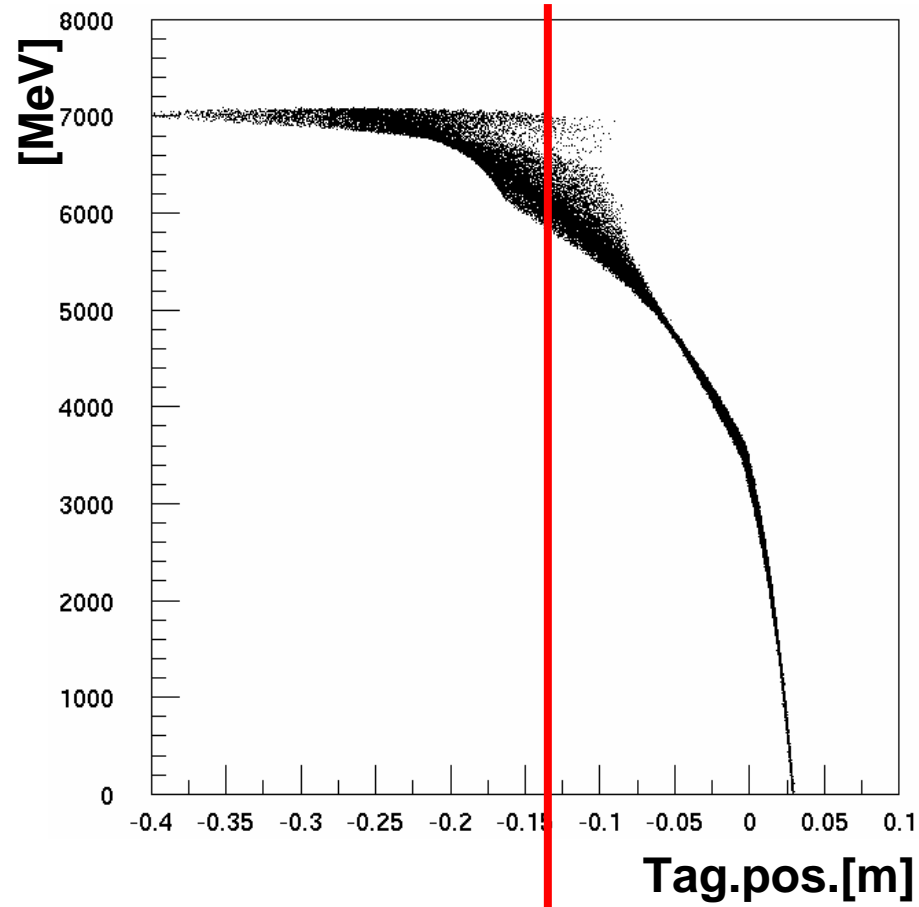
energy resolution = 15MeV
@2GeV w/ dx=100um
(23MeV w/ dx=1mm)

energy resolution = 10MeV
@2GeV w/ dx=100um
(15MeV w/ dx=1mm)

better than 33b2 case
because of small emittance

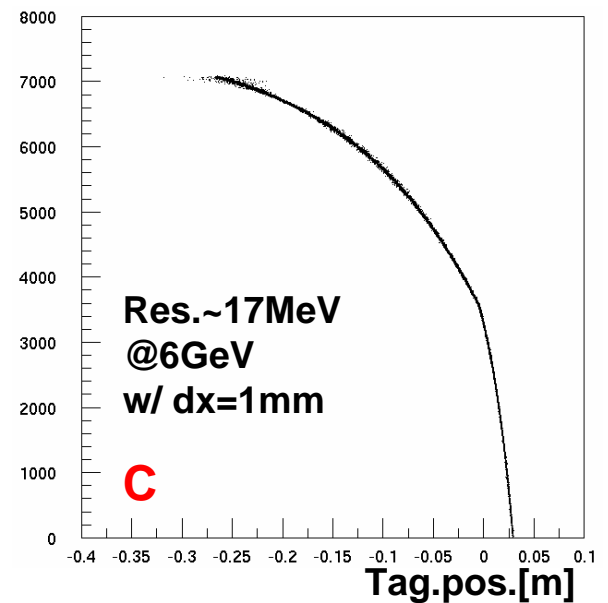
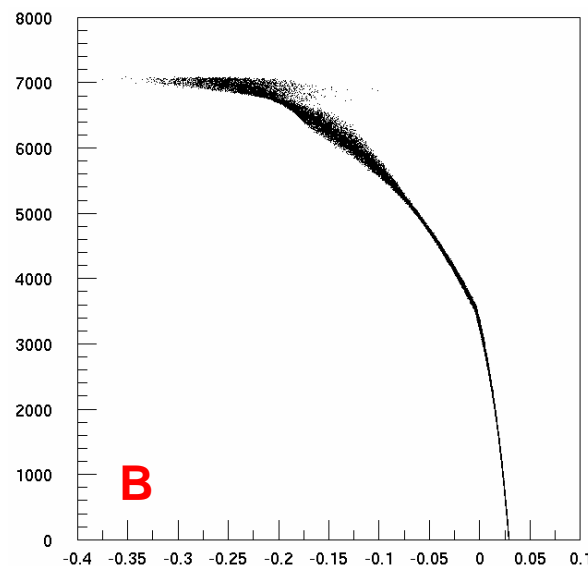
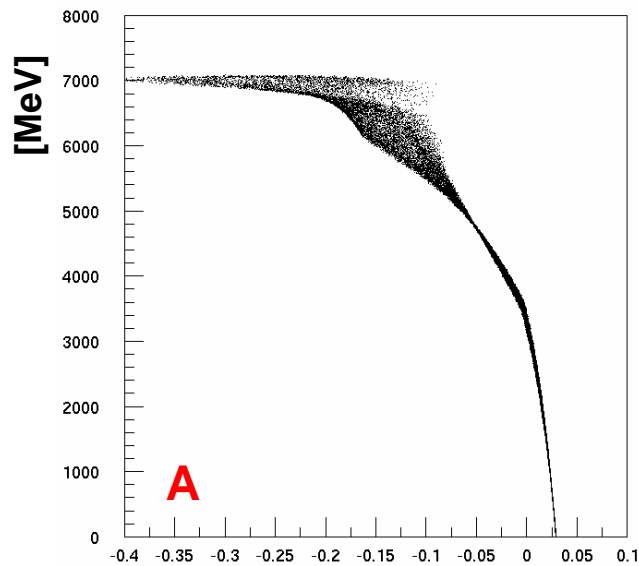
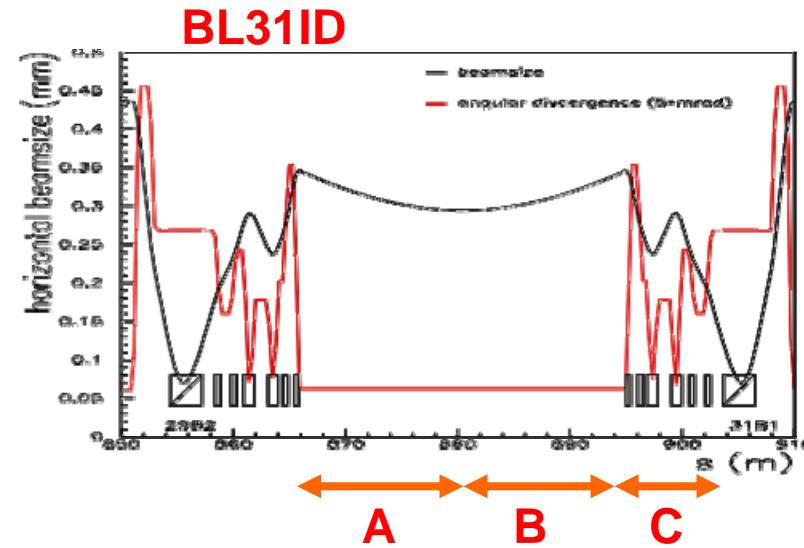


Result for LEP with X-ray



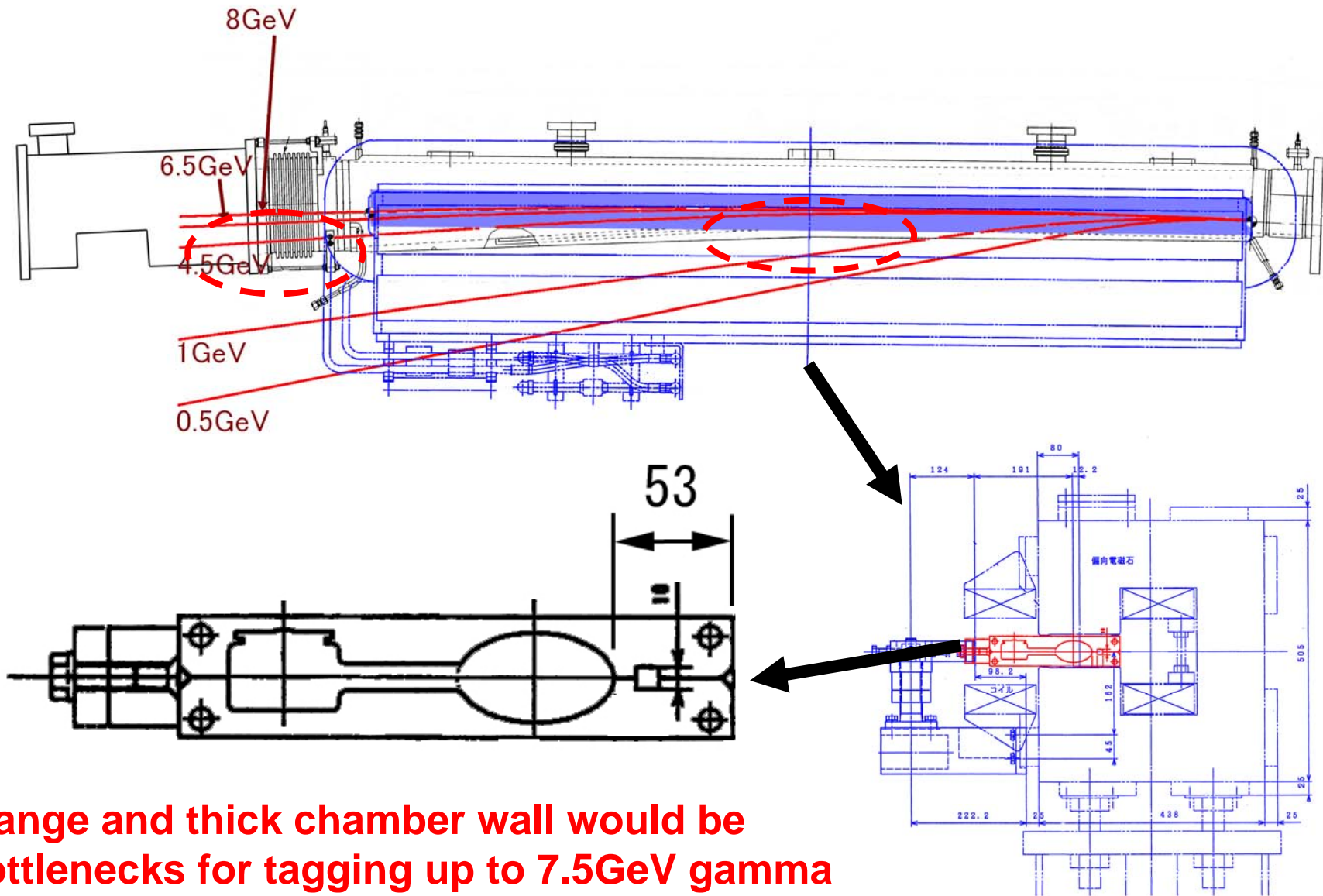
Result for LEP with X-ray (Cont')

reaction position dependence
of energy resolution
(corn of recoil electrons)



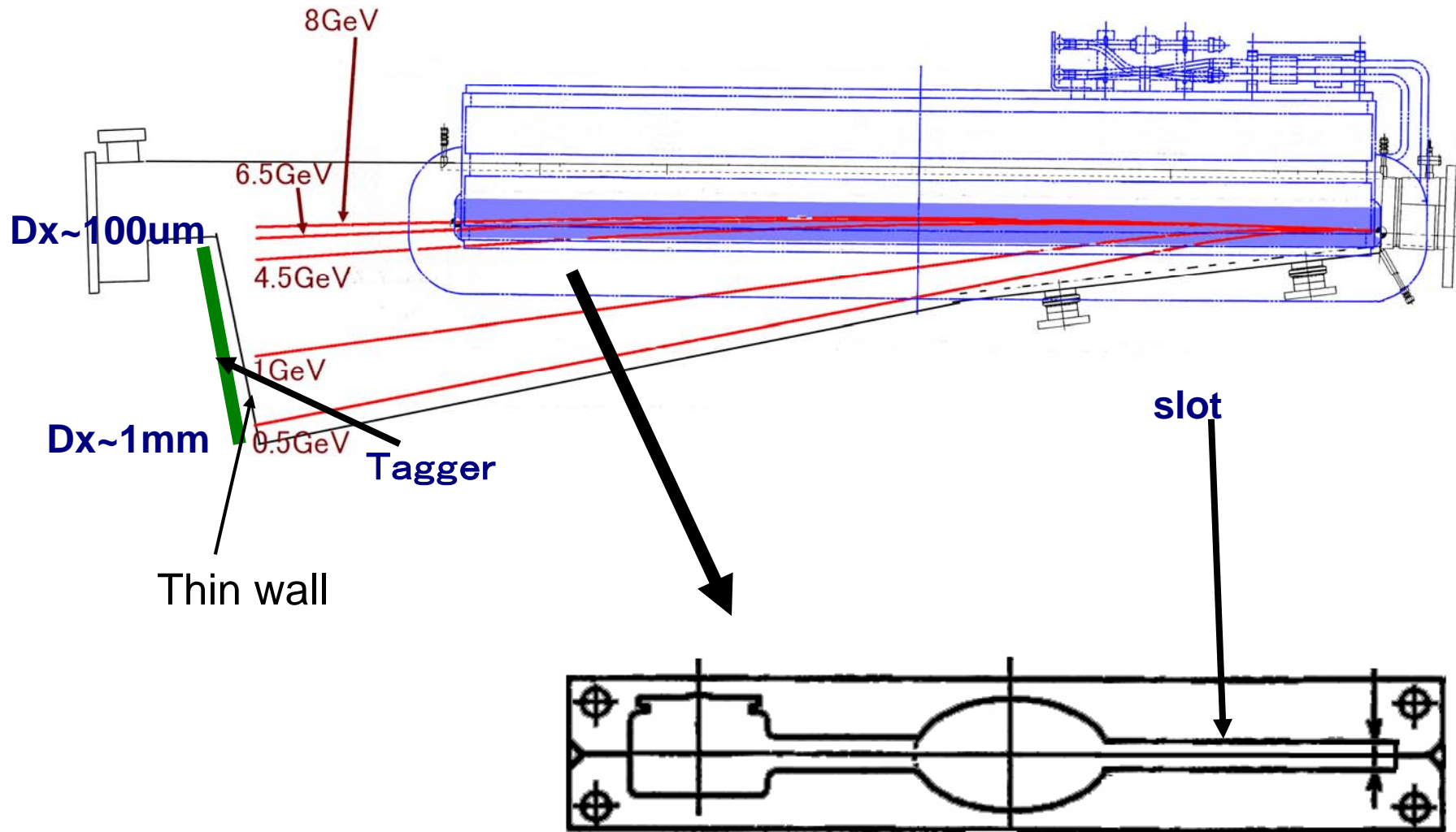
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Current 33 LEPS chamber

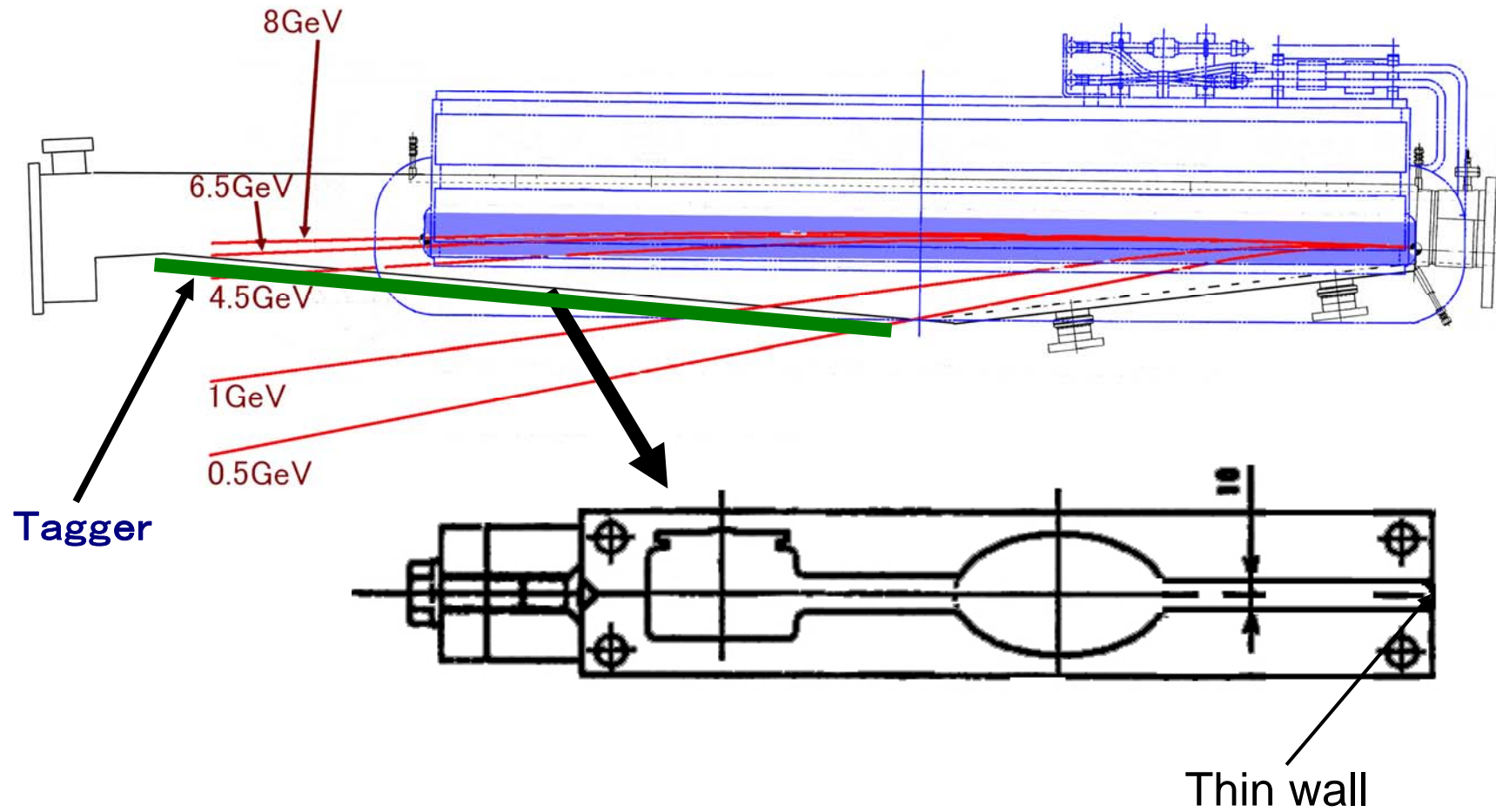


**Flange and thick chamber wall would be bottlenecks for tagging up to 7.5 GeV gamma especially for 4-6 GeV.
($X_0=89\text{mm}$ for Al)**

New LEPS2 chamber design



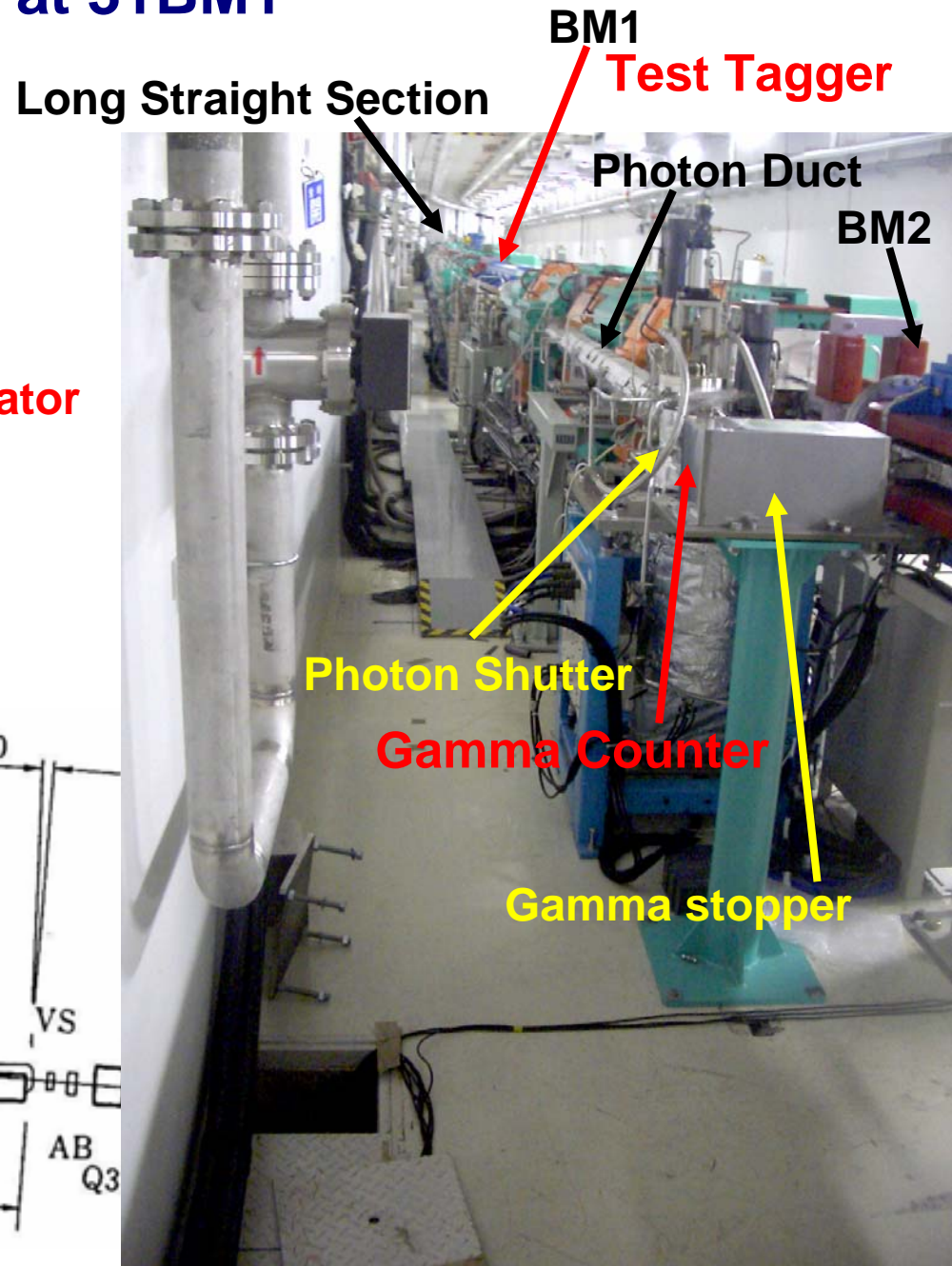
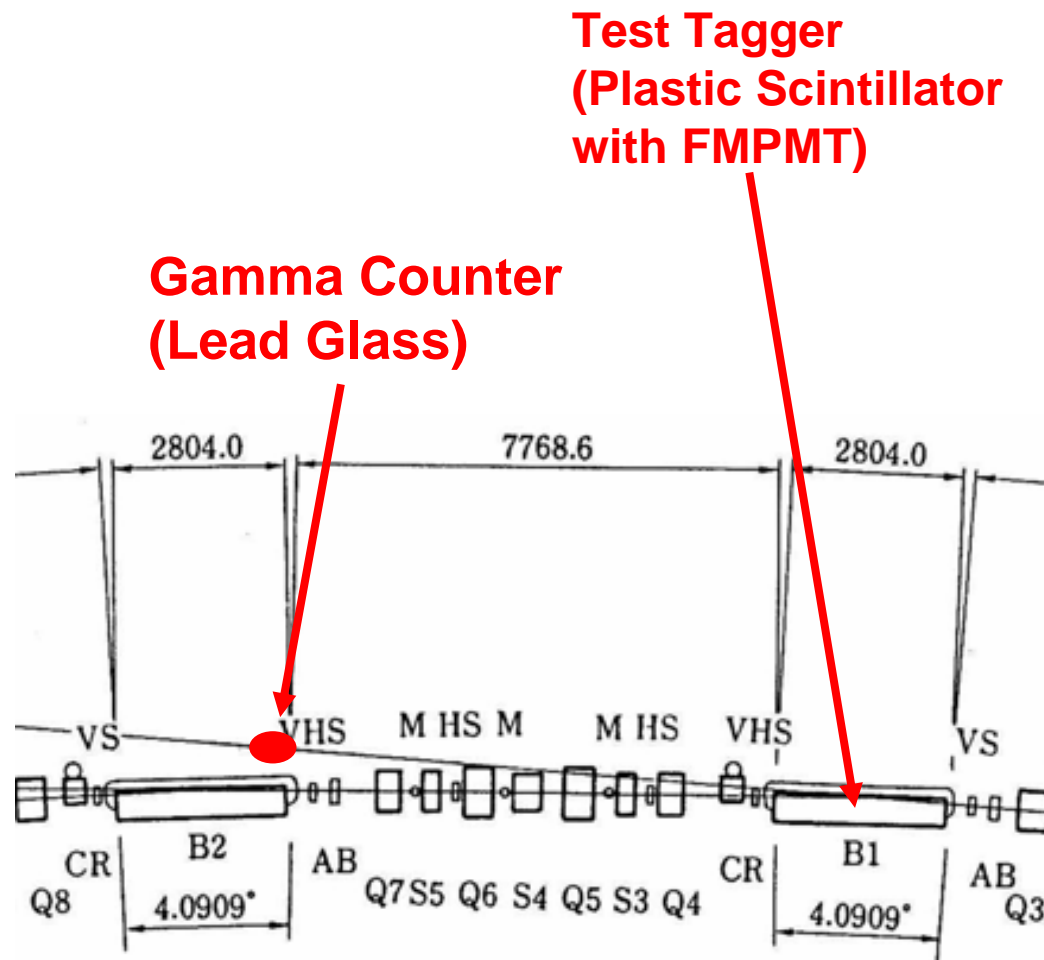
New LEPS2 chamber design II



1. Recoil electron behavior calculations
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Can low energy recoil electron survives Q magnets?

High E gamma Tagging Test at 31BM1



Test result

