Tagger microscope/quadrupole commissioning study

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GlueX run planning report, March 25, 2016

Richard Jones, University of Connecticut

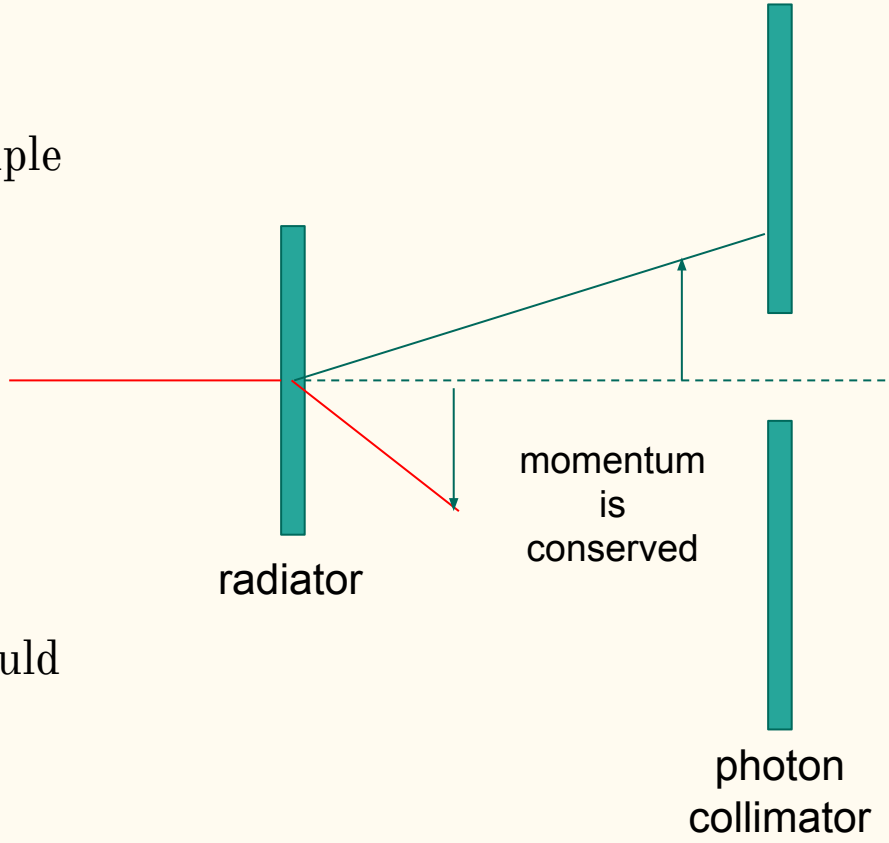
Purpose of study

- Electron collimation - proof of principle

  distance radiator-collimator: 76m
  distance radiator-microscope: 7.5m
  magnification at TAGM: 0.3

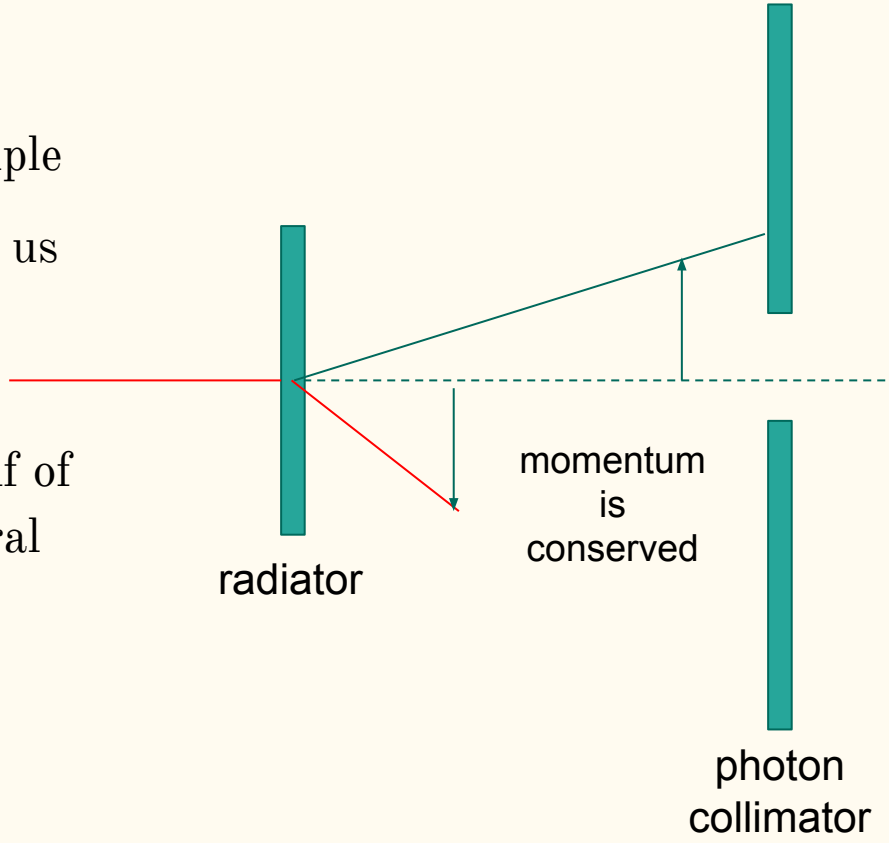
  3.4mm → 1.1mm at TAGM

- Essentially all of the useful tags should fall inside just one 2mm row of the TAGM



Purpose of study

- Electron collimation - proof of principle
- ORing all 5 rows in a column makes us less sensitive to beam motion at the radiator, but…
- It hurts our performance: almost half of the TAGM hits fall outside the central row, and generate accidentals.



Purpose of study

Questions to be answered in study:

1. How is this 1.2mm collimated stripe affected by the spot size of the electron beam (**where the quadrupole comes in**)
2. Does multiple scattering (radiator, tagger exit window) substantially widen the stripe?
3. Is the stripe stable enough to turn off the other TAGM rows and run?