Initial PS energy calibration results

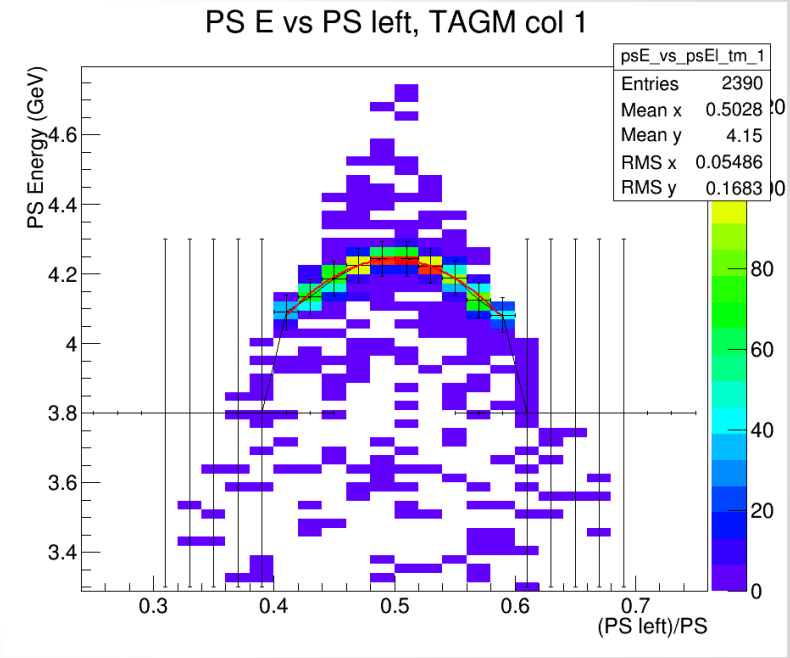
Alex Barnes

Beamline and Tagger Weekly Meeting

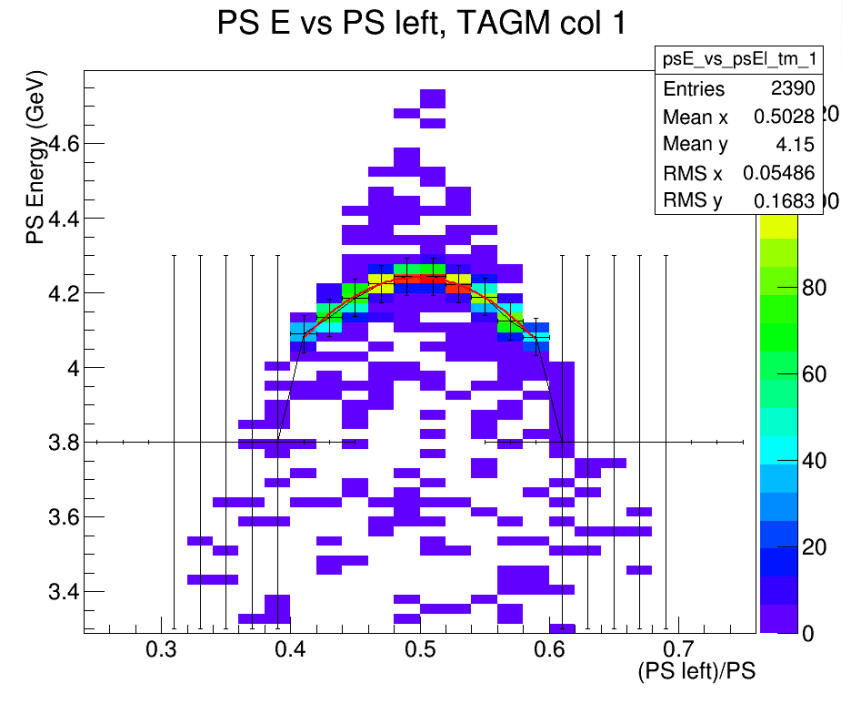
07/20/2015

Procedure

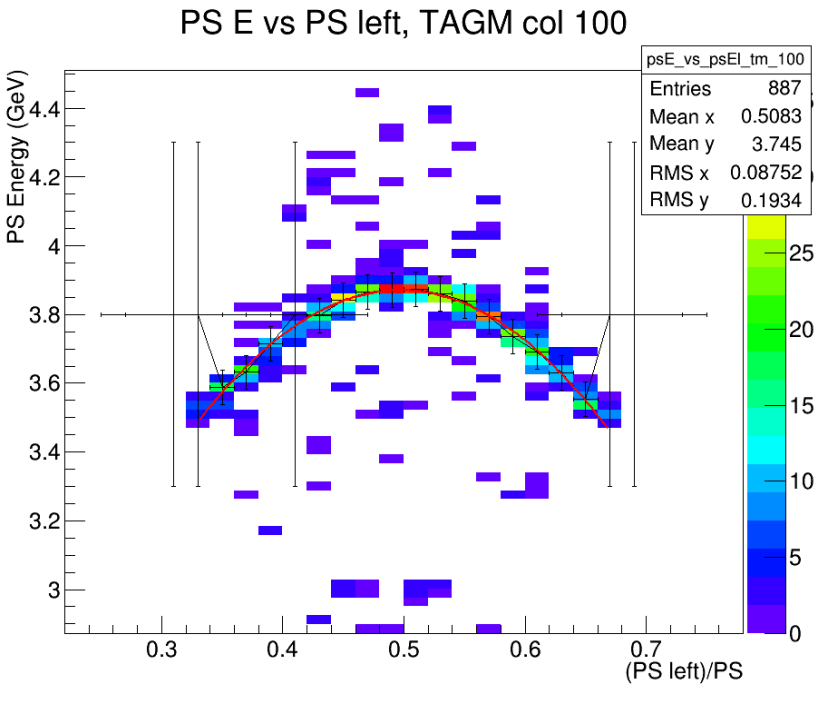
- Plot (total PS E) vs fraction (left PS E)/(total PS E) for each associated TAGM column.
- Make a projection for each fraction bin and fit with a Gaussian, record the mean
- Plot the means and fit with a 2nd order polynomial
- Find the maximum of the fit and divide each parameter by the maximum to normalize the fit
- Regenerate the initial plots with an adjusted total PS energy: divide the sum of both arm energies by the normalized fit per associated TAGM col. These should now show horizontal lines



Run 3185

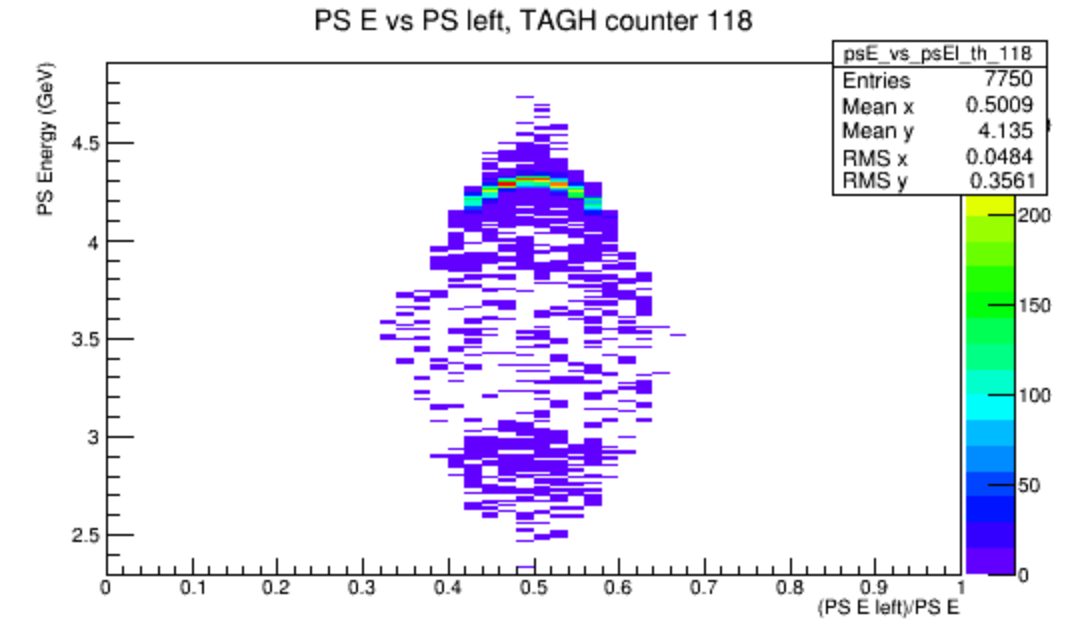


Initial histogram with fit overlaid for column 1.



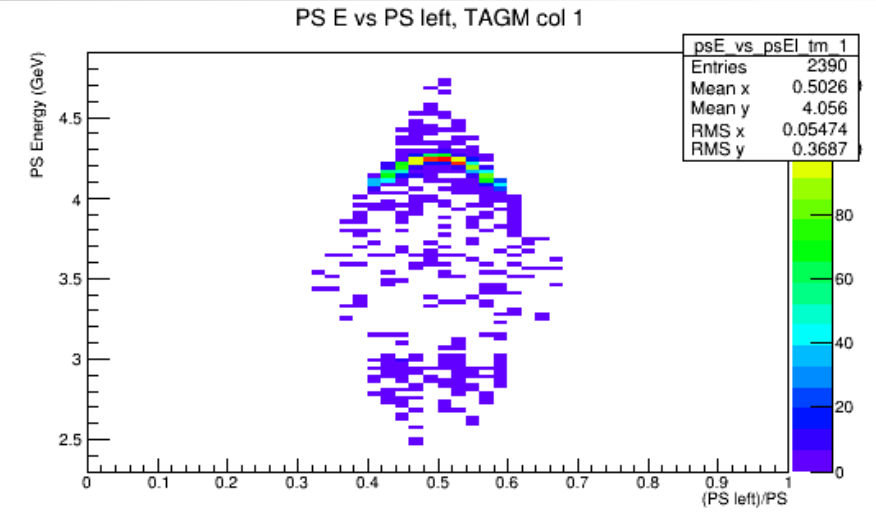
Initial histogram with fit overlaid for column 100.

Run 3185

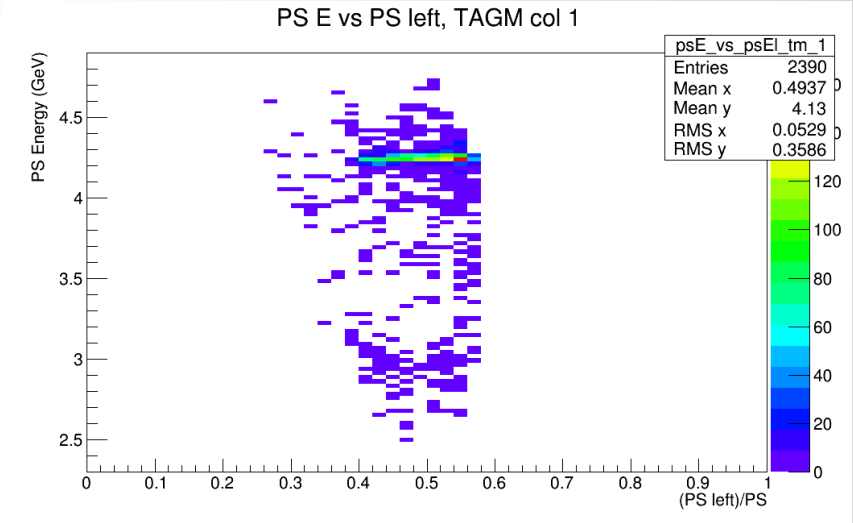


The TAGH's PS E vs (PS E left)/(PS E) shows the same shape. I'm still working on the ROOT macro to determine the corrections.

Run 3185

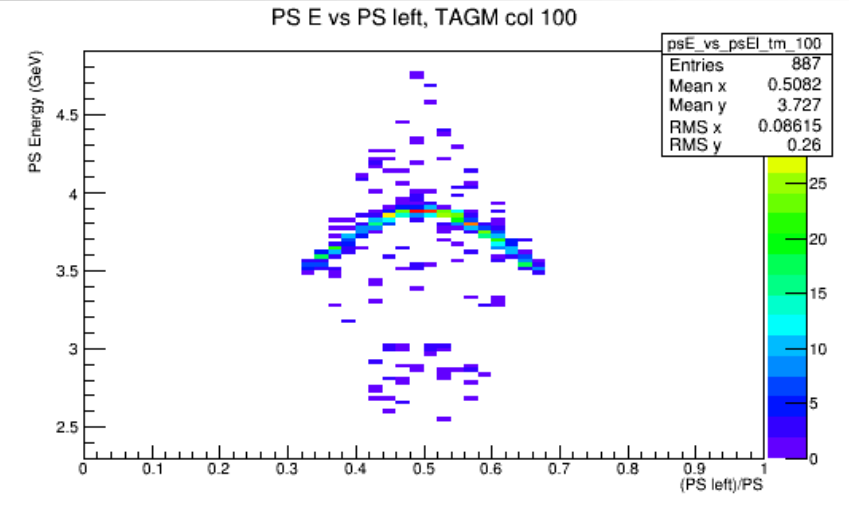


Total PS energy vs fraction (left PS E)/(total PS E) for events associated with TAGM column 1.

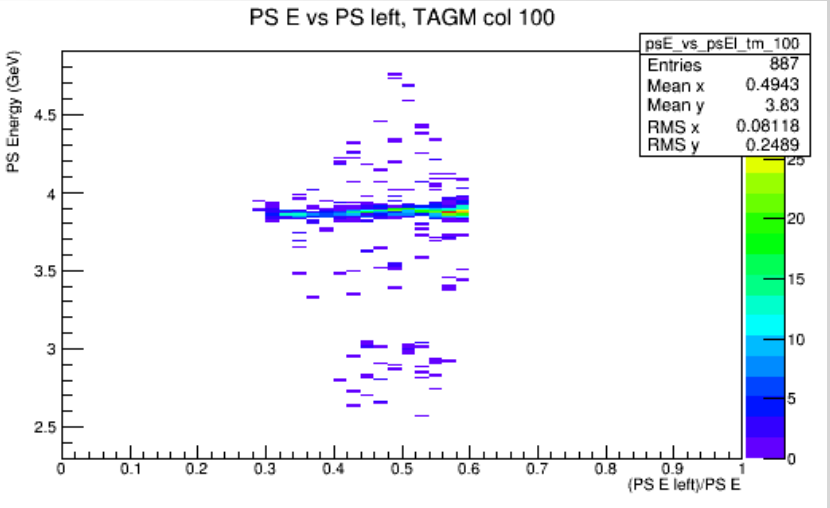


After corrections, for events associated with TAGM column 1

Run 3185

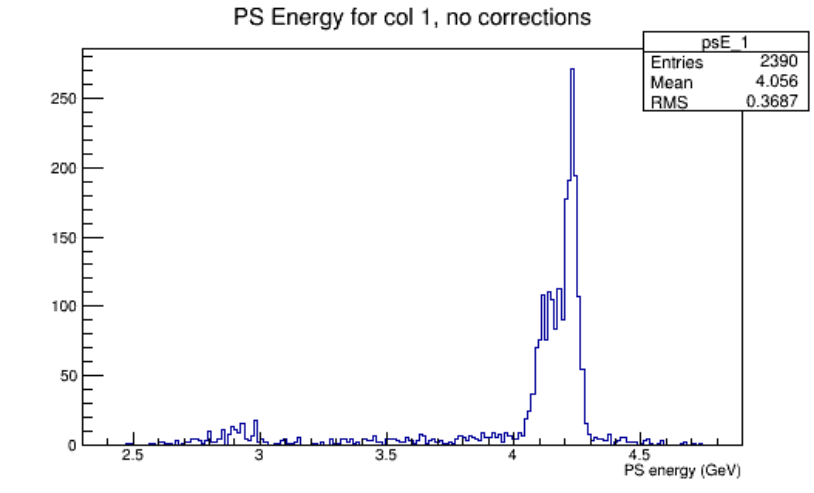


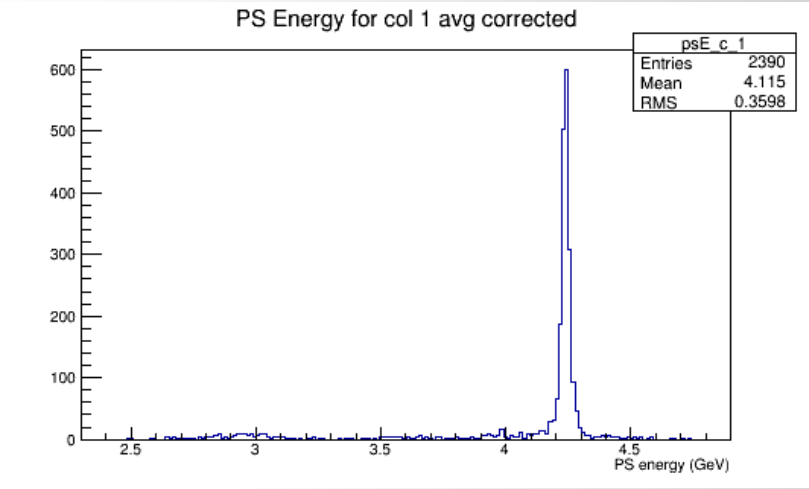
Total PS energy vs fraction (left PS E)/(total PS E) for events associated with TAGM column 100.



After corrections, for events associated with TAGM column 100.

Run 3185

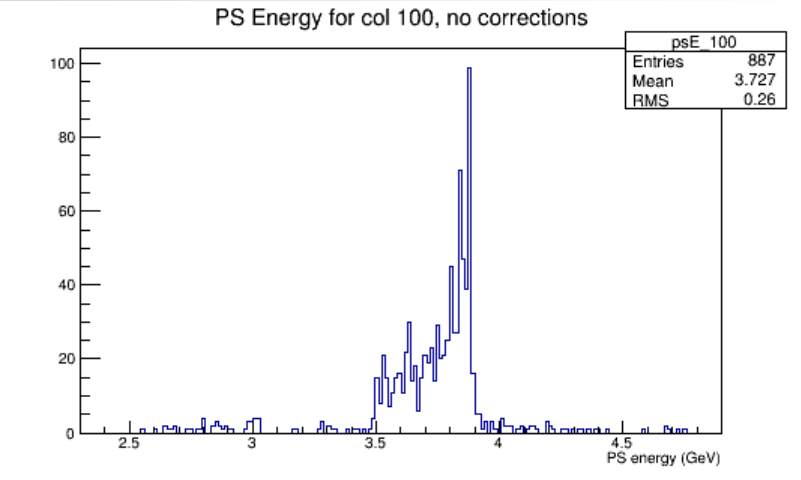


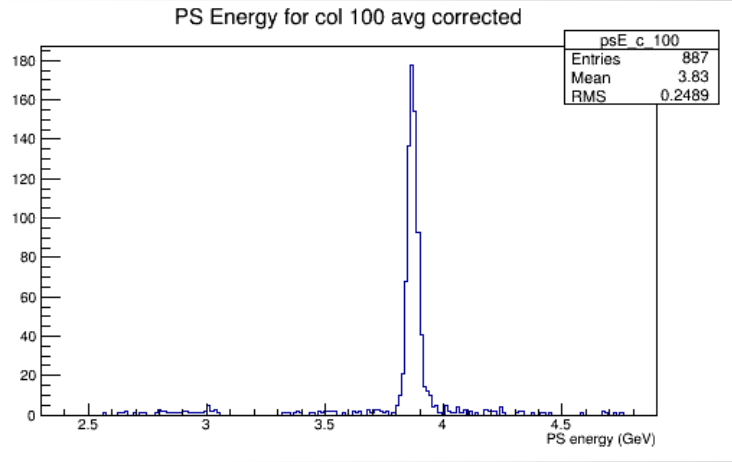


Total PS energy for events associated with TAGM column 1.

After corrections, for events associated with TAGM column 1. Gaussian fit yields a sigma of 18 MeV.

Run 3185

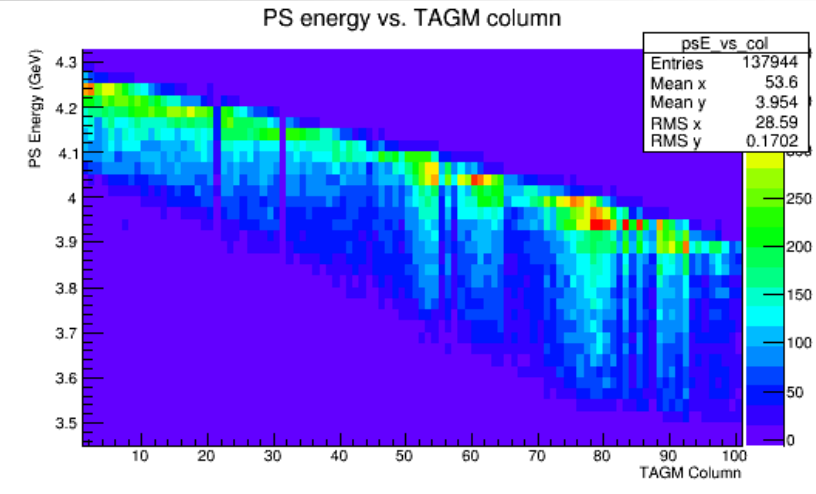




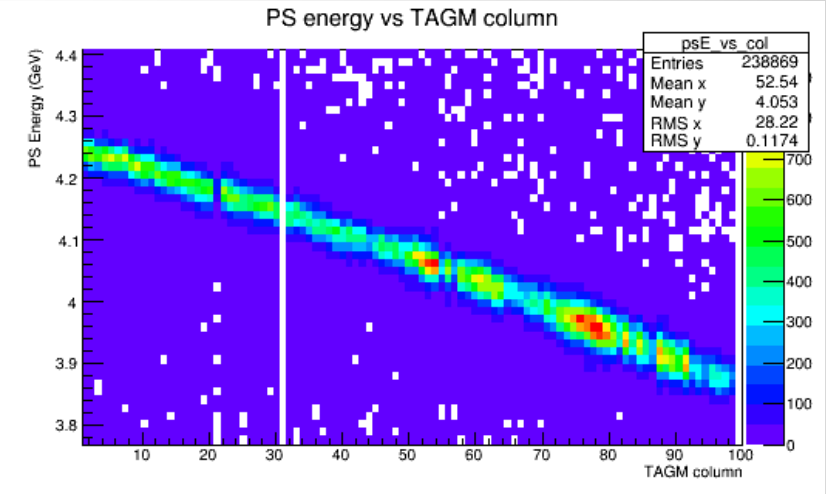
Total PS energy for events associated with TAGM column 1.

After corrections, for events associated with TAGM column 1. Gaussian fit yields a sigma of 18 MeV.

Run 3185



PS energy vs TAGM column before the corrections.



PS energy vs TAGM column after corrections

Still to be done

- Extend to include TAGH (almost finished)
- Compare results from individual corrections based on associated tagger counter with a single, average correction
- Test on runs other than 3185 (will need to adjust timing window)