Estimate of accidentals for the triplet polarimeter

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Collimated photon distribution

• Used Richard's cobrems_root code to create shape of E_{γ} distribution (top panel)

• Used shape of E_{γ} to generate 1 million events (bottom panel) that were fed into the triplet-polarimeter Monte Carlo





Accidental estimate

• For 1 million events thrown (N_T) there were 177 events seen (N_S) on the polarimeter

- Assumed a lithium converter of 10⁻³ radiation lengths
- Total expected photon rate: $R_{\gamma} = 3.3 \text{ GHz}$
- Expected total photon rate seen on device: $R_S = R_{\gamma} * (N_S / N_T) = 3.3 \text{GHz} * (177 / 1 \text{million}) = 584 \text{ kHz}$
- Expected number of polarimeter hits for a 5 ns window: $\langle n_{5ns} \rangle = R_s * 5ns = 0.003$
- Probability of accidental coincidence between pair spectrometer and polarimeter: $P_{acc} = 1 - P_0(\langle n_{5ns} \rangle) = 0.003$

