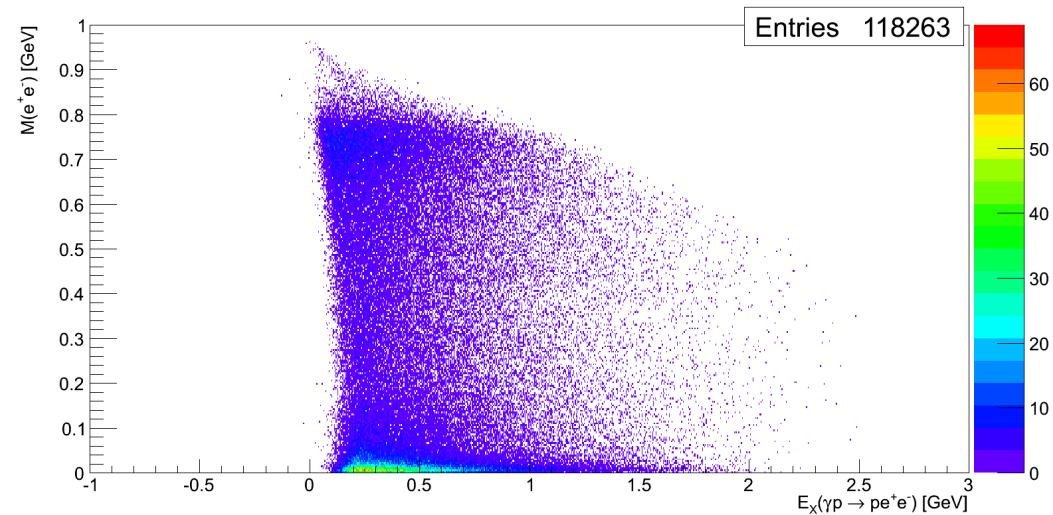
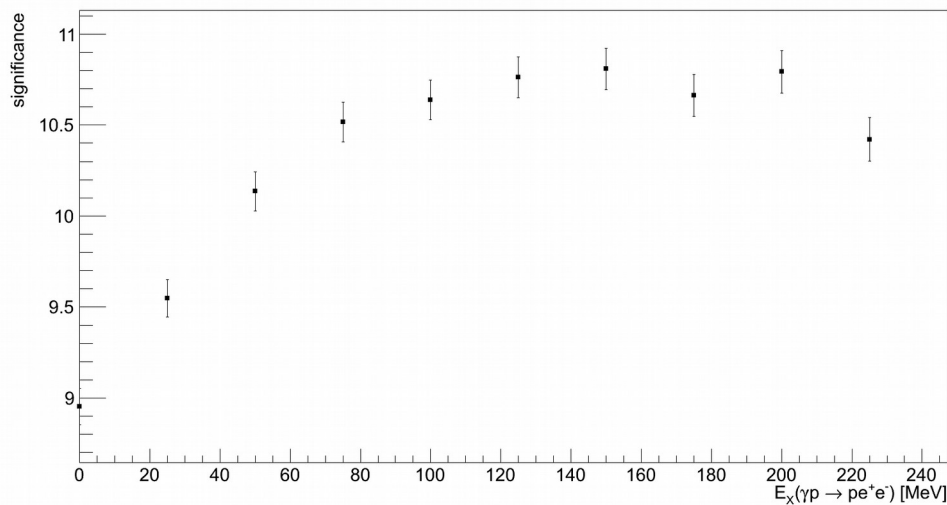


Verification of missing energy cut at $M_{E_{\text{pee}}} > 75 \text{ MeV}$

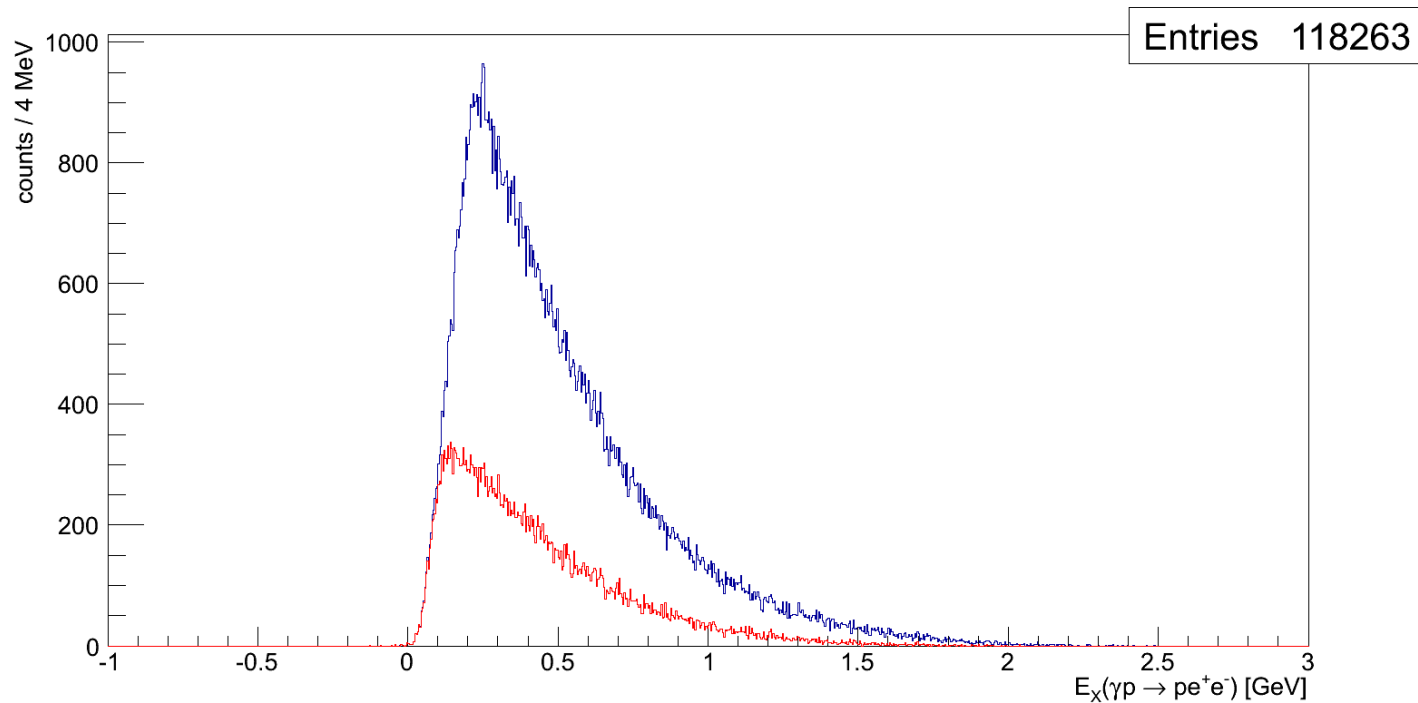
After applying all other cuts (beta, vertex, MM2pee) the significance $\text{sign} = s / \sqrt{s+b}$ is given by:

BUT: physically relevant signal distribution (in terms of form factor) is not proportional to signal channel distribution on $M_{\text{E}_{\text{pee}}}$ -axis, but shifted to lower missing energies:



→ cut should be at 150 MeV

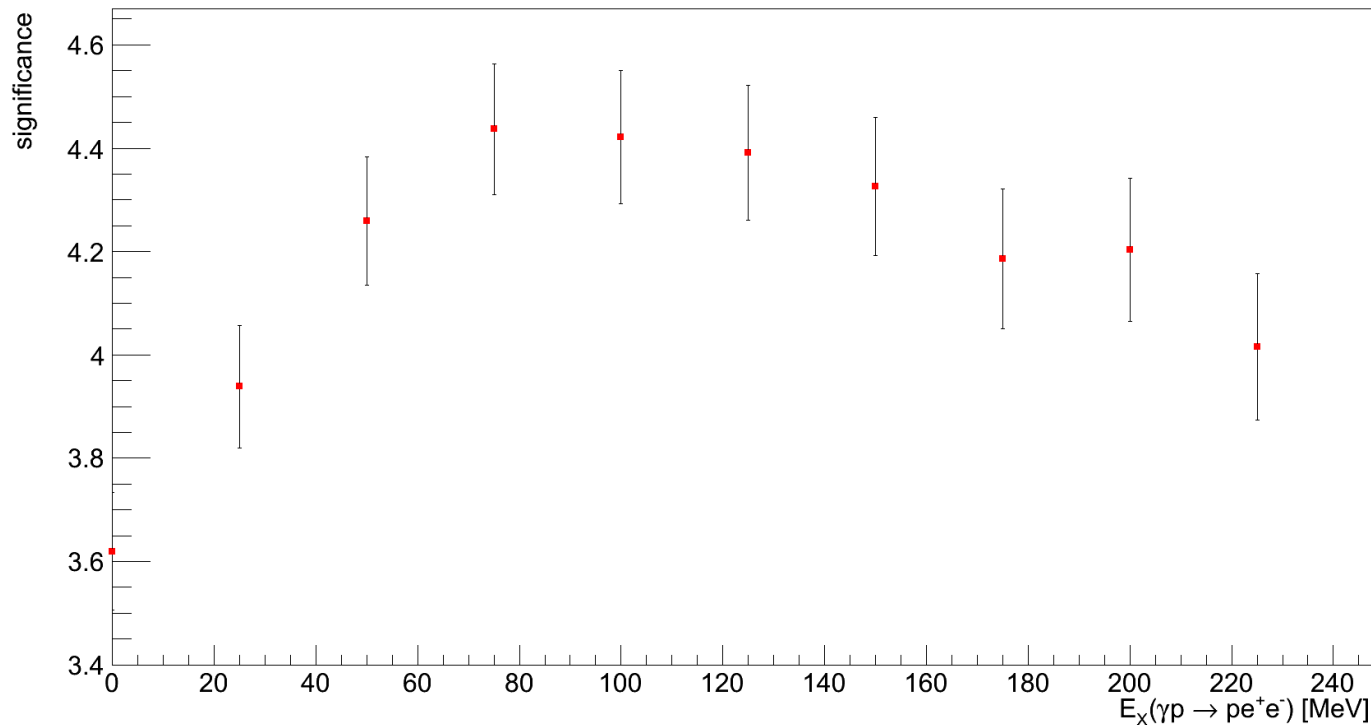
→ redefine signal as 'relevant signal'
I chose $M_{ee} > 0.5$ GeV as relevant



Beta, vertex, MM2pee + eta' peak region + $M_{ee} > 0$ GeV;
beta, vertex, MM2pee + eta' peak region + $M_{ee} > 0.5$ GeV

Relevant signal = signal * $\text{Integral}(\text{cut threshold}, \text{inf}) / \text{Integral}(\text{cut threshold}, \text{inf})$

→ different significance:



→ keep 75 MeV as cut threshold

Remark: I'm aware of the fact that I put a condition on the signal and not on the background (which should be ok as long as one does not include a concrete assumption on the background ME_{pe} distribution). At the time I did this, I did not know how to get this distribution. Now (with BES) results I know how to get it and I would do it differently (and I assume I would get a higher cut threshold because of the correlation of low ME_{pe} and high IM_{ee} in background).