

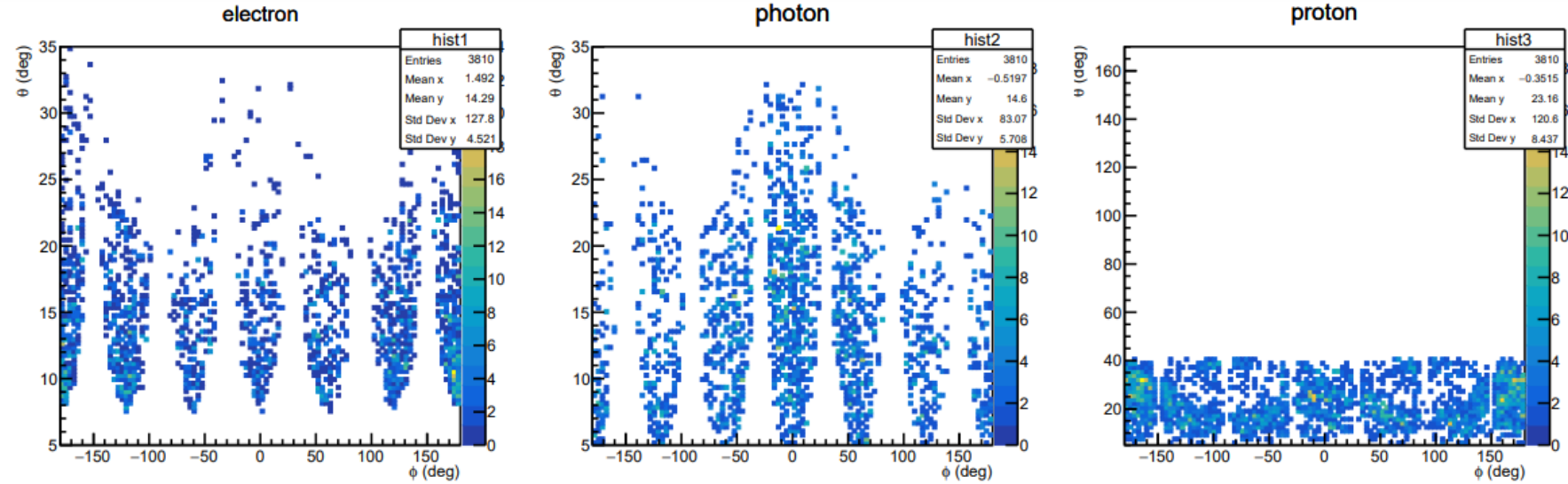
First look at pDVCS simulations for RGH

Silvia Niccolai and Juan Sebastian Alvarado (IJCLab)

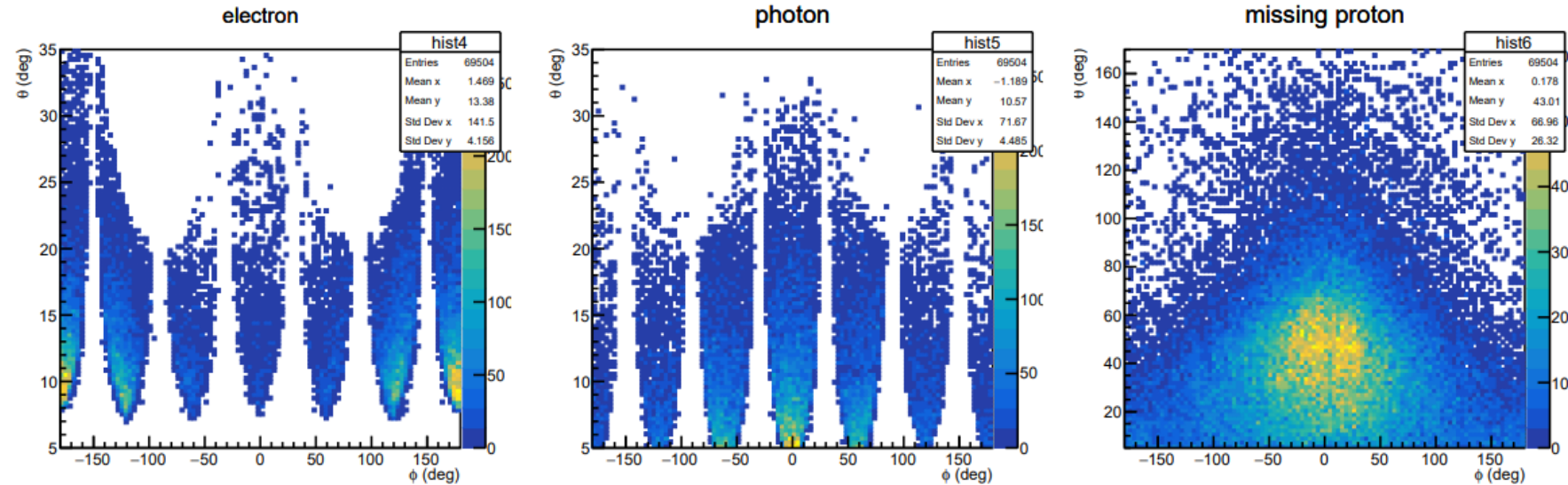
- Event generator: genepi, which generates p-DVCS and n-DVCS on hydrogen, deuterium, NH₃, and ND₃ targets
- Conditions: NH₃ target, transverse target field, **no polarized target magnet structure** (as the one in gemc is obsolete), no FT, no CD
- No beam background for now, just signal to study kinematic distributions and detection topologies
- Path to gcard: /u/home/silvia/scripts_clas12/rgg_good.gcard
- Path to yaml: /u/home/silvia/scripts_clas12/rgg_good.yaml
- Data analyzed (by Juan Sebastian) in two topologies: detected $e\gamma$ with and without detected proton (proton detection only in the FD)

Reconstructed kinematics

Proton detected



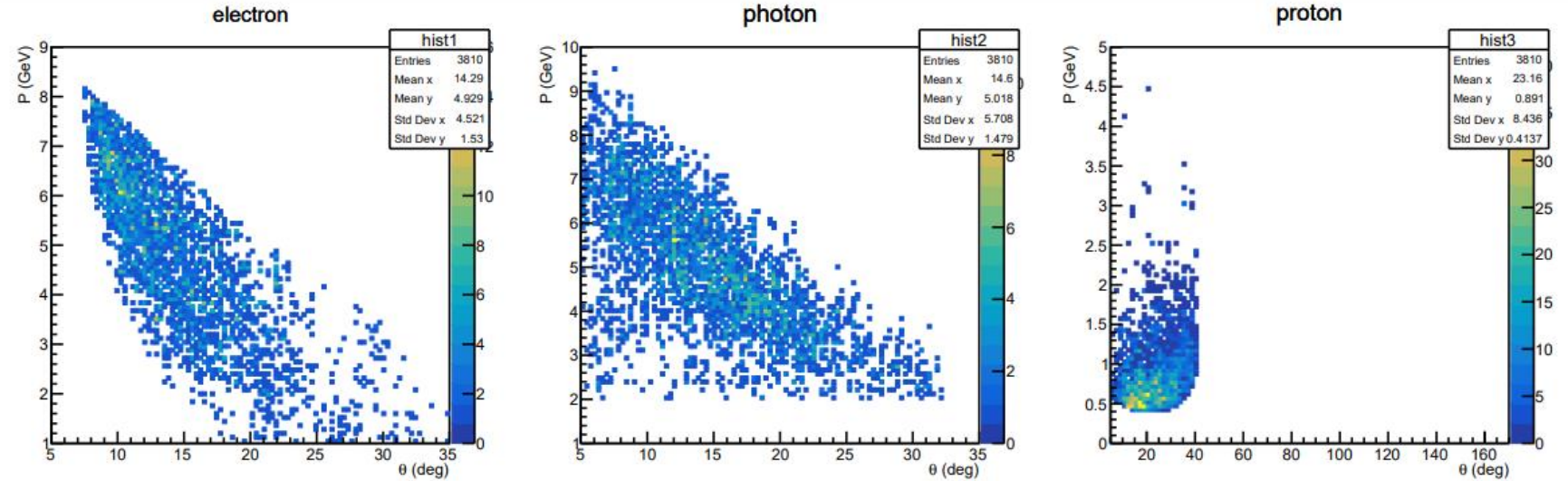
No detected proton



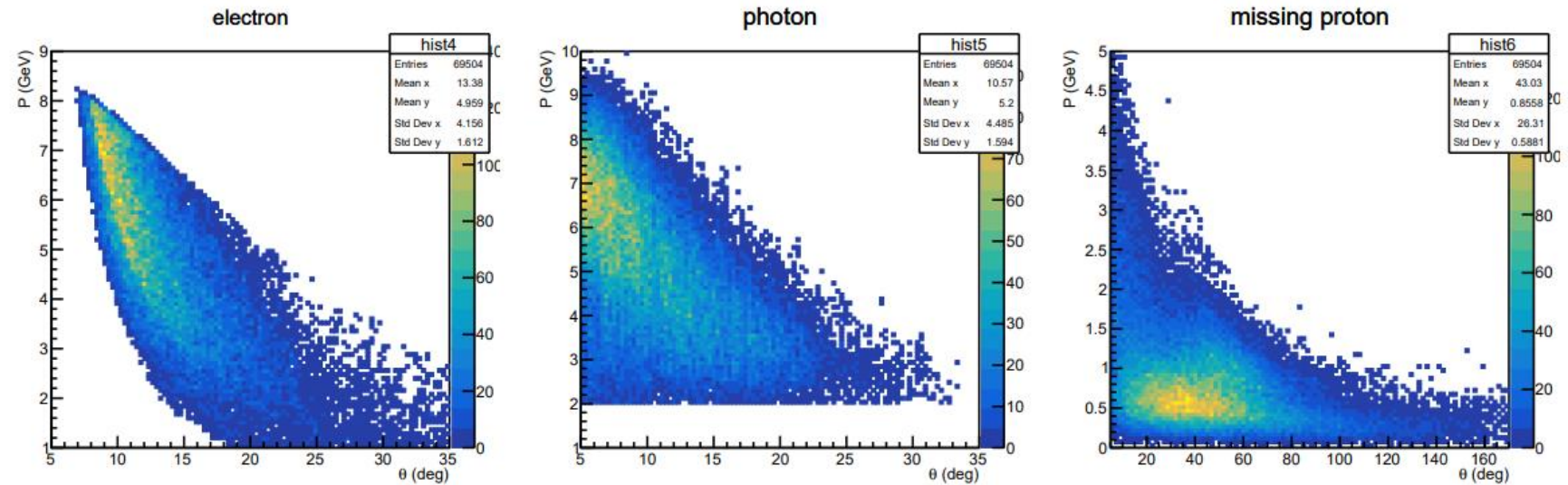
Only 5% of the events have a reconstructed proton – protons are mainly emitted at $\theta \geq 40^\circ$
Partial coverage in θ for some sectors

Reconstructed kinematics

Proton detected



No detected proton



Only 5% of the events have a reconstructed proton – protons are mainly emitted at $\theta \geq 40^\circ$

Plan/questions/to-do list

- Ask Maurizio to implement in gemc the CAD drawings of the possible design options for the polarized target magnet.
- Rerun similar simulations including the options for magnet structures, compare acceptances to pick the best option.
- Background simulations for the various magnet options (any takers?) to pick the best option.
- Could the FT be included? Were background simulations ran including FT? Is it really out of the question? The « photon in FD » topology is strongly dominated by π^0 . Without proton detection, and with the NH_3 target, background removal and exclusivity may be a major challenge. Studies will be carried out by Juan Sebastian on RGC data to see what can be done depending on the topology.
- Run similar simulations for epp^0
- Start to think of possible proton detection solutions.
- Redo count rates projections for pDVCS at the planned beam current/luminosity