# ePIC Analysis Coordination March 15, 2024

# SIDIS Working Group

**Conveners:** Charlotte Van Hulse (U Alcala),
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**Wiki of the SIDIS PWG**: https://wiki.bnl.gov/EPIC/index.php?title=SIDIS

**PWG meetings:** Tuesday 2.30 pm (~ every 2 weeks)

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- The inclusion of radiative effects in the kinematic variable reconstruction study from Anselm and Coonor was discussed.
- It is important to study these effects as remarked by the reviewers.
- It was concluded that PYTHIA8 has at least basic radiative effects included.
- It will be checked if the already available PYTHIA 8 samples are sufficient for the study. Anselm will also contact the simulation group to get a reasonably sized PYTHIA 8 sample produced.

## List of open tasks:

- **Resolution studies of the SIDIS variables** z, phi, phiS, pT.
  Using the information from the tracking detectors and the calorimeters, it has to be investigated how well the above SIDIS variables can be reconstructed.
  Also, one needs to investigate which of the detectors provides a better reconstruction depeninding on the kinematic region.

- **Particle identification (PID) studies**.
  Investigate the need for particle identification in the different kinematic regions.
  Compare the foreseen newly available PID information with the truth PID, and study the need for improvements in PID, as a function of different kinematic variables.

- **Study of radiative effects and the radiative corrections**.
  Using the DJANGOH generator, study the impact of radiative effects on the reconstruction of the kinematic variables and potentially asymmetries, by comparing the reconstructed variables for events with and without radiative effects included.

- **Study the matching between reconstructed tracks and calorimeters**.
  When using final-state particles for the reconstruction of SIDIS kinematic variables instead of the scattered lepton, one needs to take into consideration all final-state particles, including charged and neutral hadrons. At that point, it is important to identify cleanly clusters in the calorimeters as belonging or not belonging to a reconstructed track. The proposed study investigates how well this track-cluster matching is at present in the foreseen ePIC design.