EIC-Smear

Convener: Kolja Kauder

Institutions involved:

IIT Madras (PI: Prabhat Pujahari, p.pujahari@gmail.com)

MNIT Jaipur (PI: Kavita Lalwani, kavita.phy@mnit.ac.in)

Central University, Karnataka (PI: Deepak Samuel, deepaksamuel@gmail.com)

IIT Patna (PI: Neha Shah, nehashah@iitp.ac.in/neau2802@gmail.com)

IIT Madras

Goal: Update the detector test plots (qaplots and qaplots Handbook) using appropriate range of kinematic parameters dependent on reconstruction methods.

Platform used: EIC-Smear

Outcome of the work:

- Extracted ranges of various kinematic variables
- Updated steer files with appropriate energy and

  parameters to generate the ep data

- Generated ep data and detector smearing is used

  to produce qaplots for handbook

Available human resource (till December, 2021):

Prabhat Pujahari & Riya Thakkar

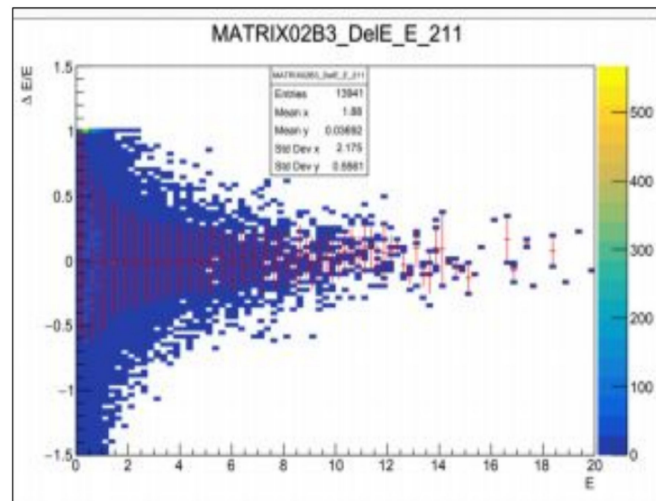Working Group : DWG: Tracking and PWG: Jet & HF, Inclusive

Figure 1: Sample plot from the handbook generated using ./qaplots. A steer file was updated with suitable values of kinematic variables to obtain ep20x250 collision data

MNIT Jaipur

Goal: Study the smearing effect for exclusive physics at EIC and reconstruct the J/ψ mass using exclusive photo production reaction at EIC.
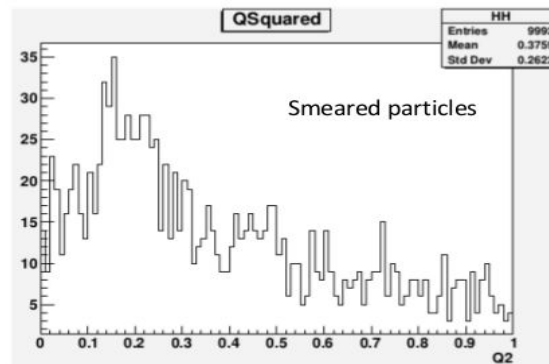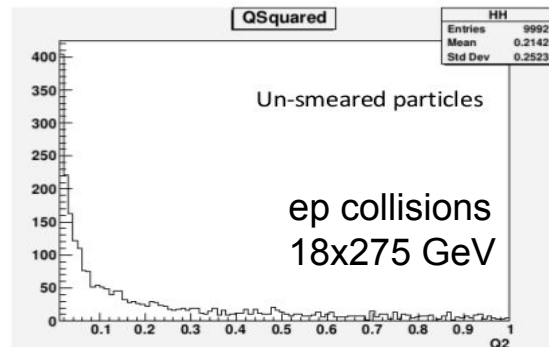
Platform used: EIC-Smear and Pythia8

Outcome of the work:

- Smearing effect on different kinematic variables

  Q^2, W^2, momentum, energy etc of all particles

  for exclusive photo production reaction is studied

  at EIC energy using EIC smear.

- currently reconstruction of J/psi mass is in progress.

Available human resource (till December, 2021):

Kavita Lalwani & M. Sc. student

Working Group: PWG (Heavy Flavour Physics: Exclusive D Meson Decays, PID); DWG (PID and Tracking)

QSquared

Entries 9992
Mean 0.2142
Std Dev 0.2523

Un-smeared particles

ep collisions
18x275 GeV

QSquared

Entries 9992
Mean 0.3759
Std Dev 0.2622

Smeared particles

Central University, Karnataka

Goal:

Development of unit and integration tests for some time

Platform used: EIC-Smear

Outcome of the work:

- Basic tests were developed
- Further work was postponed to later time

Available human resource (till December, 2021):

Deepak Samuel & M. Sc. student

Working Group: DWG - DAQ

Note: Based on past experience on DAQ related work, group is interested in DAQ WG and have contacted Sylvester Joosten.

IIT Patna

Goal:

Comparison of EIC-Smear and Delphes

Platform used: EIC-Smear and Delphes

Outcome of the work:

- EIC-Smear and Delphes were installed locally
- Preliminary plots were obtained
- To do: write an example for both the methods and make comparisons

Available human resource (till December, 2021):

Neha Shah & Projukta Das

Working Group: PWG - Exclusive production

Note: Our group is interested in exotic spectroscopy and have contacted Justin Stevens and Derek Glazier from ATHENA-Exclusive PWG