Some Introductions…

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ePIC Exclusive, Diffractive, and Tagging PWG Meeting

January 10th, 2024

Goals of this meeting

- Review physics channels which have been studied before.
  - Use that as a starting point to guide our work toward the TDR.
- Summarize what is present in the DD4HEP simulations in terms of geometry and reconstruction.
  - Discuss actually running simulations, things to watch out for, etc.
- Use overview of physics channels to define needed benchmarks which will provide a way to track detectors updates, and allow for standardization of plots to use for TDR *et al.*
- *ASK QUESTIONS – HOPEFULLY GET SOME ANSWERS.*

Overview

Wednesday Morning Block (conveners - Rachel & Raphael):

- General Physics overview (**presentation**)
- Rough overview of beamline detectors (**presentation**)
- Review of plots in ECCE/ATHENA/CORE proposals (**hands-on/working session**)
- Needed plots for TDR – planned reproduction of plots from previous proposals and discussion of additional plots (**hands-on/working session**)
  - Goal is to come up with concise set of plots which show how the ePIC detectors meet the NAS requirements for the EIC.
  - Provide help for people to process events through npsim and begin analyzing output.

Wednesday Afternoon Block (conveners Alex & Dhevan):

- Detailed detector discussion and DD4HEP implementation (**presentation**)
  - E.g. what output branches does an analyzer access to extract their information.
- Running simulations with particle gun and example of physics input (**hands-on/working session**)
- How issues in simulations relate to measurements (e.g. beam line magnet field settings for simulation and EICrecon) (**hands-on/working session**)
  - Discussion of needed tasks and assignment of people
 - Solving of open issues
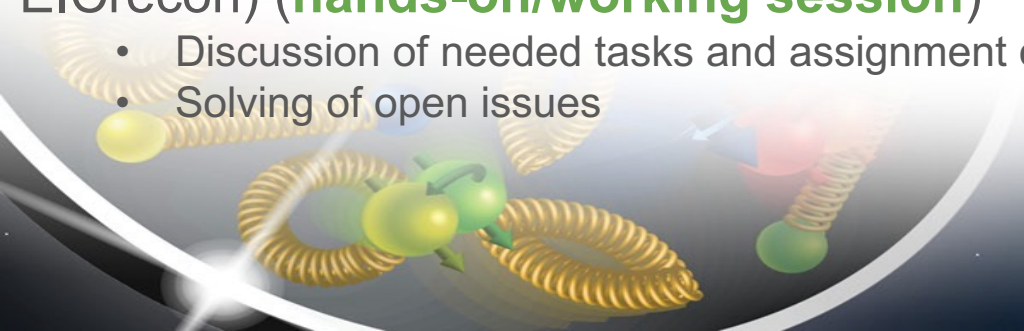
Overview

Thursday Morning Block (convener - Kong):

- Overview of benchmarks in ePIC framework (**presentation)**
- Translation of plots from Wednesday morning to specific benchmarks (**working session**)
- Coding benchmarks and testing them (**working session**)

Thursday Afternoon Block (conveners - Nathaly & Simon):

- Discussions between detector experts on open tasks
- Continued work from first three sessions
- Open mic for short presentations to generate discussion
  - Dhevan - Lumi-LowQ2 Coincidence
- Next steps and tracking of progress?
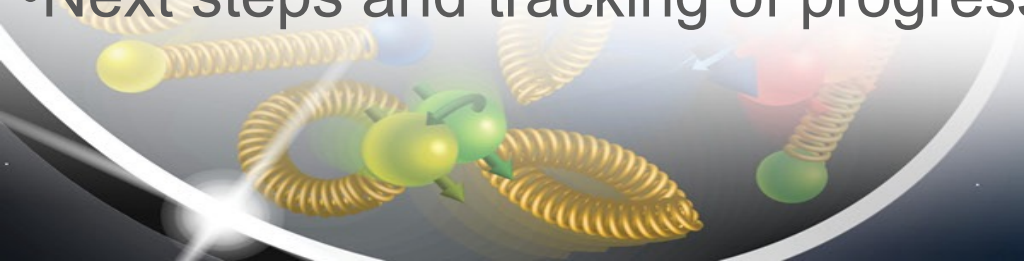
Other Tasks

- Solve pass-through issues for event-level information to EICrecon (e.g. beam energy/species).
- Add/complete benchmarks for various final states for purposes of evaluating impacts of various changes to geometry/reconstruction.
- Solve remaining issues related to reconstruction, with real time feedback from users on needed information in output branches (e.g. ACTS reconstruction specifying which detector subsystem produced the track).
- Evaluate impacts of various backgrounds on specific observables and discuss mitigation strategies.
- Standardize some basic analysis tools for common observables (e.g. t-reconstruction), and create an analysis repository for them to expedite the starting of analyses for others in the future.