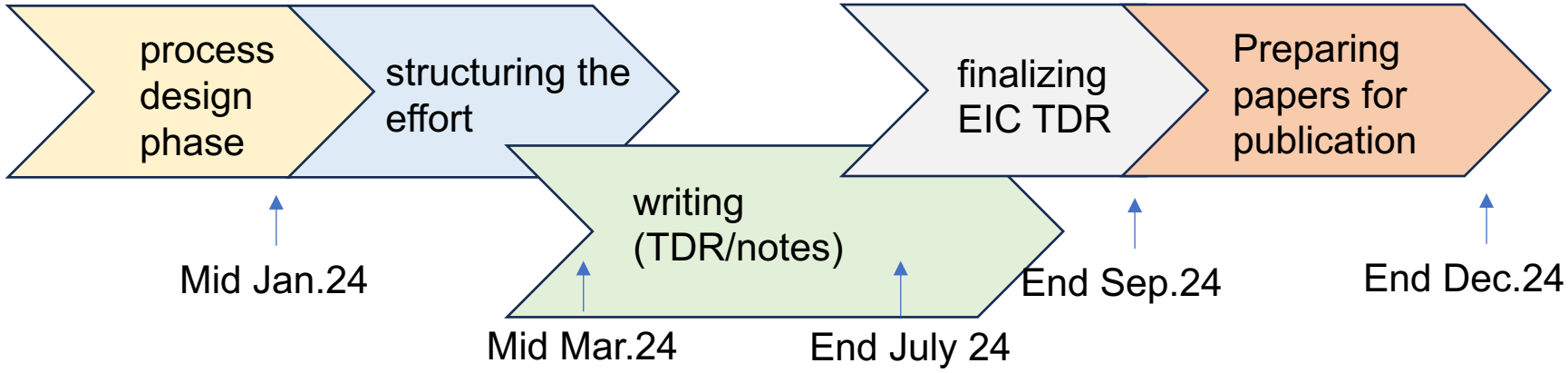
1st Analysis Meeting with the Indian Institutions

Rosi Reed (Lehigh) - Salvatore Fazio (Calabria)

Slide by John Lajoie

- In 2024 the ePIC collaboration will produce:
  - The ePIC contributions to the EIC TDR
    - The EIC TDR is the top priority
      - Chapters on *Physics Goals and Requirements* and *Experimental Systems*
      - Not just the document, but the simulations and detector R&D that form the basis
      - Requires close cooperation between the collaboration and the project!
- An ePIC Detector Design paper:
  - Derived and expanded from the *Experimental Systems* TDR chapter
- An ePIC Physics Performance paper:
  - Derived and expanded from the *Physics Goals and Requirements* TDR chapter
- Both to be published in a scientific journal (such as NIMA, JINST, or PRC)
- These publications will serve as a focus in developing the ePIC Membership and Publication policies.



TDR structuring & companion papers

Slide by Silvia Dalla Torre

TDR

- **PM Serves as the "managing editors" for the ePIC Contributions to the EIC TDR**
- **TDR Chapter 2**
  - ***Holistic detector performance*** (short form)
    - The TC Office acts as "editor"
    - Organized/supervised by CC WG conveners
  - ***Physics performance and science reach*** (short form)
    - The ACs acting as "editors"
    - The Physics WGs as subgroups for text drafting
- **TDR Chapter 8**
  - ***Detector description and basic performance***
    - Project CAMs/Collab. DSL's acting as "co-editors" for their sections
    - The DSCs provide studies, material, text, etc.
  - ***Software, Analysis and Data Preservation***
    - Project CAMs and SCCs acting as "editors"
    - The electronics/DAQ CC WG and the software WGs

ePIC publications

- **SP Office serves as the "managing editors" for the ePIC publications**
- **ePIC Physics Performance Publication:**
  - ***Holistic detector performance*** (extended text)
    - The TC Office acts as "editor"
    - Organized/supervised by CC WG conveners
  - ***Physics performance and science reach*** (extended text)
    - The ACs acting as "editors"
    - The Physics WGs as subgroups for text drafting
- **ePIC Detector Publication**
  - ***Detector description and basic performance***
    - DSL's acting as "editors" for their sections
    - The DSCs provide studies, material, text, etc.
  - ***Software, Analysis and Data Preservation***
    - SCCs acting as "editors"
    - The electronics/DAQ CC WG and the software WGs for text drafting

What we need to succeed

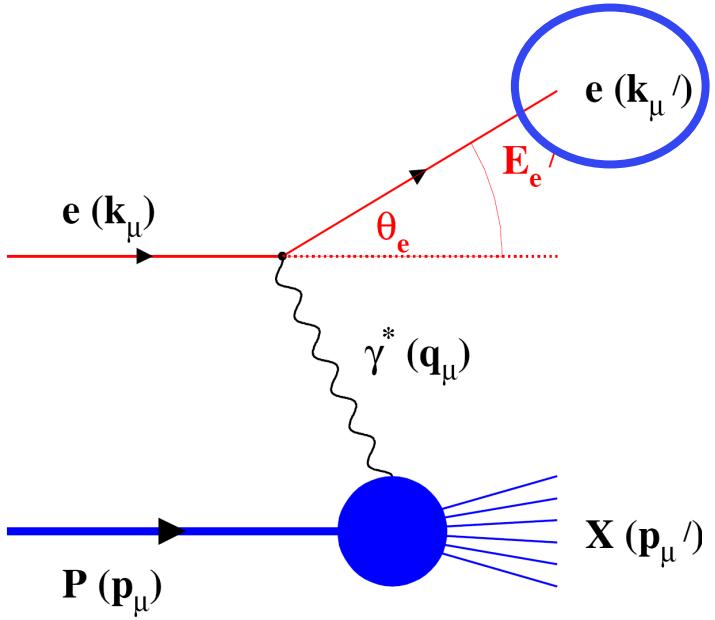
- Performance plots
  - Analysis of simulated events to show detector capability of measuring a certain process and observable
  - Analysis tutorials set in place: https://eic.github.io/tutorial-analysis/
- Analysis tools
  - Many reconstruction tools still not ready (e.g., electron finder, Particle ID, vertexing)
  - Work with Software & Computing group - requires strong coding background
- Work force is crucial!
  - We are in the process of matrixing in people and tasks/analyses
  - Opportunity for new/emerging Institutions with students/postdocs available
    - impact on TDR (current ePIC's topmost priority) and on a large scientific publication
  - ~1y timeline (aligns well with a master's student)
  - longer involvement on reconstruction tasks (with S&C) very much needed (especially on PID)
    - needs for more experienced people (Ph.D. students/postdocs) with a strong background in coding
- **This is our 1st meeting to gather input from this community**

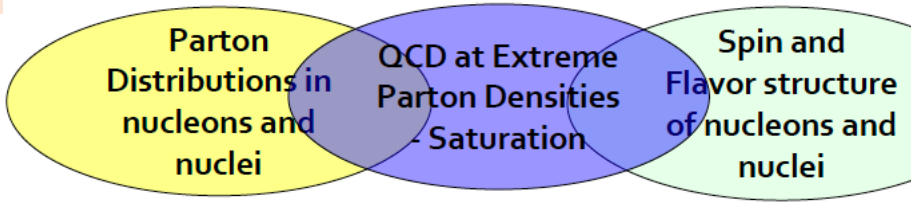
Physics Working Groups

Inclusive PWG

- Conveners:
  - Claire Gwenlan (claire.gwenlan@physics.ox.ac.uk)
  - Tyler Kutz (tkutz@mit.edu)

Focus: on measurements that involve detecting, identifying, and measuring the kinematics of the scattered electron



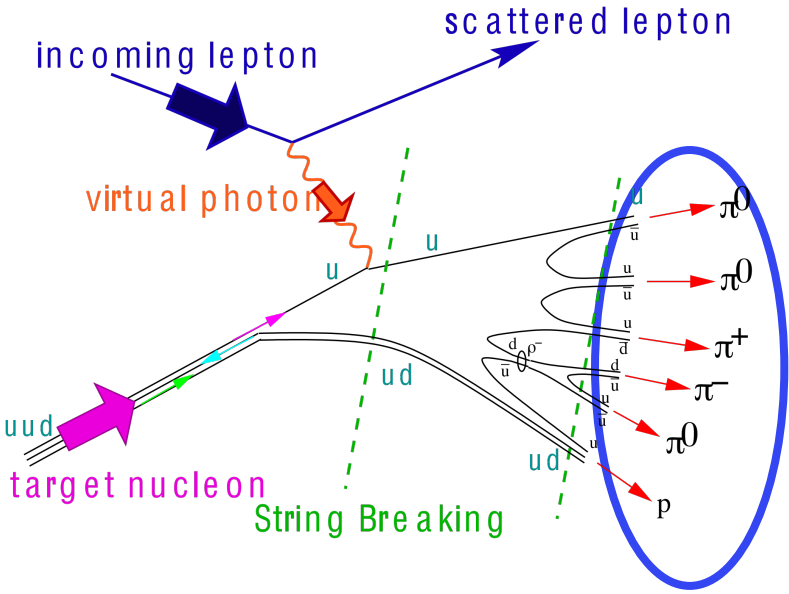


Meeting time: Mondays (biweekly) at 12pm ET
Mailing list: eic-projdet-Inclusive-l@lists.bnl.gov
Indico: https://indico.bnl.gov/category/417/
Mattermost: https://chat.epic-eic.org/main/channels/inclusive-physics

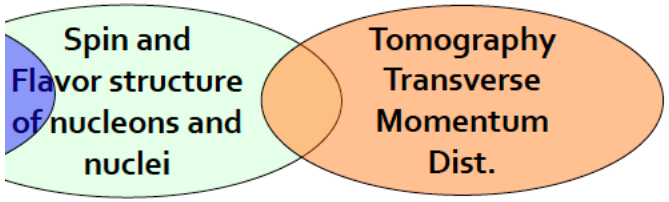
SiDIS PWG

- Conveners:
  - Charlotte Van Hulse (charlotte.barbara.van.hulse@cern.ch)
  - Stefan Diehl (stefan.diehl@uconn.edu)

Focus: on measurements that require detecting, identifying and measuring a final state hadron or hadrons in addition to the scattered electron

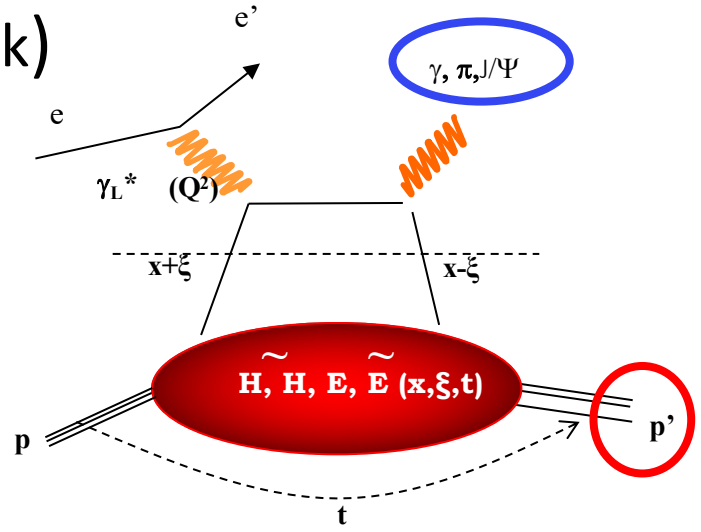


Meeting time: Tuesdays (biweekly) at 8:30am ET
Mailing list: eic-projdet-semiincl-l@lists.bnl.gov
Indico: https://indico.bnl.gov/category/418/
Mattermost: https://chat.epic-eic.org/main/channels/semi-inclusive



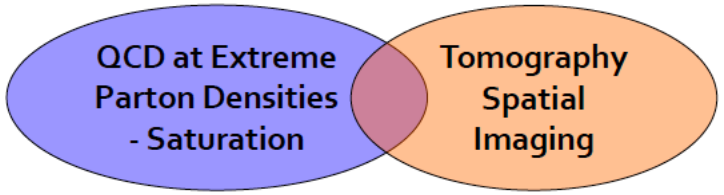
Exclusive + Diffraction + Tagging PWG

- Conveners:
  - Raphael Dupré (raphael.dupre@ijclab.in2p3.fr)
  - Rachel Montgomery (Rachel.Montgomery@glasgow.ac.uk)



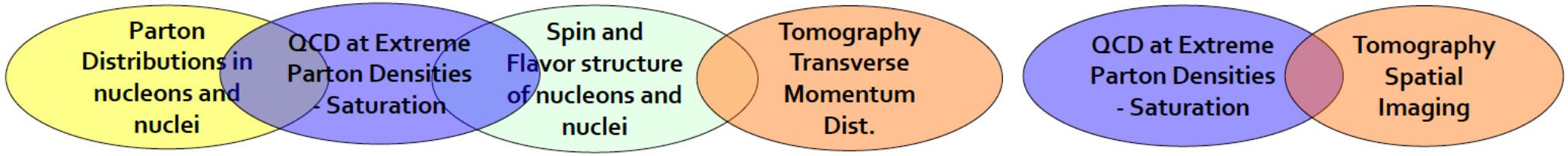
Focus: on measurement that require detecting the scattered proton/ion, whether it remains intact or not, together with all the final state produced particles, in addition to the scattered electron

Meeting time: Mondays (biweekly) at 12pm ET
Mailing list: eic-projdet-excldiff-l@lists.bnl.gov
Indico: https://indico.bnl.gov/category/419/
Mattermost: https://chat.epic-eic.org/main/channels/phys-exclusive-diffractive

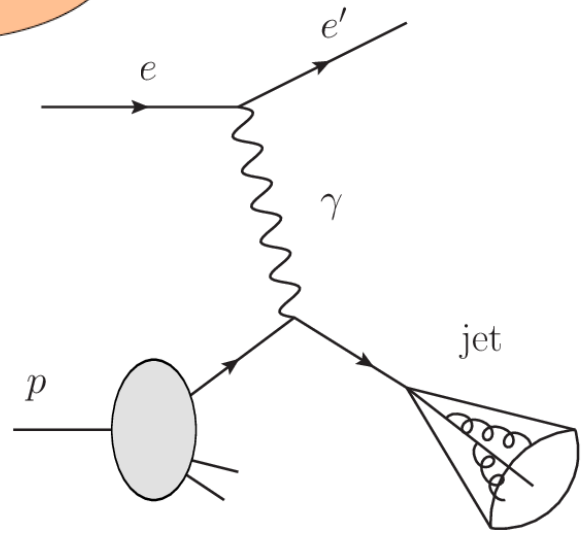


JETS + Heavy Flavor

- Conveners: Olga Evdokimov (evdolga@uic.edu), Brian Page (bpage@bnl.gov)



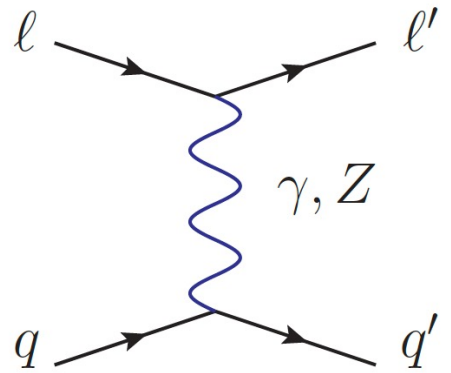
Focus: on measurements that involve high momentum exchanged processes, which could produce a spray of final state particles or hadrons that have one or more heavy quark constituents



Meeting time: Wednesdays (biweekly) at 12:00pm ET
Mailing list: eic-projdet-jethf-l@lists.bnl.gov
Indico: https://indico.bnl.gov/category/420/
Mattermost: https://chat.epic-eic.org/main/channels/phys-jets-hf
Wiki page: https://wiki.bnl.gov/eic-project-detector/index.php/JetsHF

Beyond Standard Model + Precision Electro-Weak PWG

- Conveners:
  - Ciprian Gal (ciprian@jlab.org)
  - Michael Nycz (dfe3ks@virginia.edu)



Beyond
EIC «core science»

Focus: on measurements of the cross-sections, helicities of electroweak gauge bosons that can lead to a better understanding of quark-level electroweak couplings and the potential for measurements beyond the standard model

Meeting time: Mondays (biweekly) at 12pm ET (together with the Inclusive PWG)
Mailing list: eic-projdet-bsmew-l@lists.bnl.gov
Indico: https://indico.bnl.gov/category/421/
Mattermost: https://chat.epic-eic.org/main/channels/ew-bsm