EIC Generic R&D Proposal 7:

Refined Methods for Transfer Matrix Reconstruction Using Beamline Silicon Detectors for Exclusive Processes at the EIC

PIs: Alex Jentsch and Michael Murray

Preliminaries

- We were granted 86% of our request!
  - $108,712 total – this leaves ~$90k for paying a postdoc(s) or students.
  - We did not ask for travel since this project can really be done remotely.
- From Dave: “I believe the committee liked this proposal for the same reasons I did: its clarity, brevity, relevance, and potential for impact on a relatively short time scale. But the generic R&D program is extremely competitive, and only a few proposals could be completely funded. Now that you know your funding level (~86%), I hope you’ll be able to quickly develop a strategy for attracting talented young people to carry out this interesting project.”

Statement of Work

- From Dave: “Given that your award will be a bit higher than 80%, and inflation is relatively high now, reasonable people could disagree over exactly how ambitious the scope of your SoW should be. I will likely simply accept your best judgement on that, but I’d like a clear SoW which tells what can be achieved at the budget level I have proposed.”
- **Our SoW is rather simple:**
  - Integrate current code into EPIC (Alex).
  - Work on new algorithm with ML techniques (postdoc + student + Alex).
  - Integrate new codes into EPIC (Postdoc + student + Alex).
  - Compare performance (may fall outside the scope of this R&D).

Who will do the work, and what is the timeline?

- January:
  - Alex will implement his current code/solution into the EPIC framework.
  - EICRecon is daily improving, so January is sensible for an expectation to integrate this code.
  - In parallel, we need to identify who will be the main developer for the ML algorithm.
- February/March:
  - Onboarding new person, getting them settled with what has been done, have them reproduce old results.
  - Begin work on initial ML solution to the problem.
- April onward:
  - Full algorithm development + applications to more-challenging final states.
  - Integration into EPIC.

- We have a couple of leads on current postdocs who might be willing to split their time on this project, which is an ideal scenario (less onboarding).
  - If you have anyone you'd like to recommend, let us know, as we need to lock this down fairly quickly.