UMass, Amherst Expression of Interest (EOI)
October 31, 2020
Questionnaire

Please indicate the name of the contact person for this submission:
Krishna Kumar, *kkumar@umass.edu*

Please indicate all institutions collectively involved in this submission of interest:
University of Massachusetts, Amherst, USA

Please indicate the items of interest for potential equipment cooperation:
We are interested primarily in the following subsystems:

- Compton Polarimeter
- Backward (forward electron direction) calorimetry/PID and associated DAQ.

We have informed the polarimetry group that we will contribute to the development of the EIC polarimeters via simulations, studies of potential systematic errors and possibly photon or electron detector and readout development. We hope to initiate discussions on the calorimetry/PID/DAQ for improved electron identification and efficiency as soon as possible.

Please indicate what the level of potential contributions are for each item of interest:
We anticipate in-kind labor contributions and existing facilities provided in our local laboratory spaces. These contributions are envisioned to be towards design, construction, commissioning, and maintenance of the experimental apparatus, including software support where applicable.

Please indicate what, if any, assumptions you made as coming from the EIC Project or the labs for your items of interest:
We assume design and engineering support from the EIC project. Material and supply costs to be provided by the EIC project.

Please indicate the labor contribution for the EIC experimental equipment activities:
3 faculty (Kawall, Kumar and new hire in the mid-2020s), 2 to 3 post-docs, 3 to 4 graduate students, 4 to 5 undergraduate students
Machine shop staff : 2 full time technicians

The time commitment of members of the UMass, Amherst group in the EIC efforts described in this EoI is anticipated to be as follows:

Institution Name	Professor	Research Professor	Staff Scientist	Postdoc	Graduate Student	Undergrad. student	Engineer	Designer	Technician	Total Sum
UMass Amherst	0.15			1.5	1.5	0.8				3.95

Please indicate if there are timing constraints to your submission:
On the items of interest listed above we propose start with a contribution of 0.25 FTE postdoc effort starting in 2023 with the potential to ramp up to 1.5 FTE postdoc effort in later years when we are in the construction/commissioning/operation stage.

Please indicate any other information you feel will be helpful:
The group has extensive experience in fixed target electron scattering (Kumar) and collider asymmetry measurements (Kawall) both for hardware and analysis, including electron beam polarimetry.

We have 1500 sq. ft in total of modern lab space in the newly constructed Physical Sciences Building at UMass, Amherst. One of the 600 ft sq. ft. spaces has a 2 ton crane. In addition, the lab spaces have dedicated clean room and electronics assembly space shared among physics faculty.