

Charge to the BNL EIC Science Task Force

The purpose of this task force is to consolidate and focus a well-defined effort at BNL to develop and advance the science program for an Electron Ion Collider, both for e-A and e-p collisions. Based in the BNL Physics Department, the Task Force will work closely with the accelerator scientists in the C-A Department, and with the working groups of the global EIC Collaboration.

Basic science questions and key measurements:

- Assemble a list of science questions that will drive the mission statement for an EIC, and a corresponding set of key measurements that will drive the machine requirements. A preliminary list should be completed in advance of the May EIC Collaboration meeting.
- Carry out simulations to demonstrate the feasibility and quality of the key measurements. An initial plan should be prepared for discussion at the May EIC Collaboration meeting. On a time scale of the fall of 2009 the Task Force should settle on a small set of key measurements to pursue in detail. Specific goals should be set for results that will be ready at the 2010 INT workshop.
- The above should include consideration of an initial “medium-energy” stage.

Machine requirements:

- Identify requirements for an EIC machine to accomplish the key measurements established above, including a “medium-energy” stage.

Detector design and development:

- Develop preliminary design concepts for possible EIC detectors based on the requirements related to the key measurements.
- Develop a common software framework for physics and detector simulations.
- Identify long-lead time (generic) R&D needs for an experimental detector.

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