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### **Beam Dynamics Considerations in Electron Ion Colliders<sup>1</sup>**

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The nuclear physics community is converging on the idea that the next large project after FRIB should be an electron-ion collider. Both Brookhaven National Lab and Thomas Jefferson National Accelerator Facility have developed accelerator designs, both of which need novel solutions to accelerator physics problems. In this talk we discuss some of the problems that must be solved and their solutions. Examples in novel beam optics systems, beam cooling, and beam polarization control will be presented.

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