

Abstract Submitted
for the APR21 Meeting of
The American Physical Society

Green Energy Future EIC Collider¹ DEJAN TRBOJEVIC, STEPHEN BROOKS, SCOTT BERG, THOMAS ROSER, FRANCOIS MEOT, Collider Accelerator Physics -Brookhaven National Laboratory, NICHOLAOS TSOUFAS, VLADMIR LITVINENKO, Collider Accelerator Physics -Brookhaven National Laboratory, GEORG HOFFSTAETTER, COLWYN GULLIFORD, KIRSTEN DEITRICK, DAVID SAGAN, ADAM BARTNIK, CLASSE-Cornell Laboratory for Accelerator Based Sciences and Education, WILLIAM LOU, SLAC, COLLIDER ACCELERATOR PHYSICS -BROOKHAVEN NATIONAL LABORATORY COLLABORATION, CLASSE-CORNELL LABORATORY FOR ACCELERATOR BASED SCIENCES AND EDUCATION COLLABORATION — We call the future Electron Ion Colliders (EIC) green energy colliders as either the Superconducting Energy Recovery Linac ‘ERL’ or Superconducting Recirculating Linacs Accelerator (RLA) are used with their energy fully recovered in the ERL case with the electron beam brought back to the linac by the single beam line without requiring electric power as it is made of permanent magnets. The single beam line transports all electron energies at once as it uses the Fixed Field Alternating Linear Gradient (FFA-LG) principle with a very strong focusing. The designs are based on experience on the very successful results from commissioning of the Cornell University and Brookhaven National Laboratory Energy Recovery Test Accelerator – ‘CBETA’. Examples of the green EIC at Relativistic Heavy Ion Collider (RHIC) and of the CERN Large Hadron Collider - LHeC are presented.

¹Green Energy Future Electron Ion Colliders

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Date submitted: 14 Jan 2021

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