

Abstract Submitted
for the APR21 Meeting of
The American Physical Society

ERL e^+e^- Collider NIKHIL BACHHAWAT, VLADIMIR LITVINENKO, Stony Brook University, MARIA CHAMIZO-LLATAS, YICHAO JING, FRANCOIS MEOT, THOMAS ROSER, Brookhaven National Laboratory, ERL E+E- TEAM — The study of Higgs boson and searches for Beyond Standard Model physics are major topics of research in particle physics today. e^+e^- colliders provide a cleaner channel to study particle interactions and would complement LHC and other particle colliders in operation. The Energy Recovering Linac (ERL) e^+e^- collider is a high energy design for an e^+e^- collider that can potentially achieve center of mass beam energies of up to 600 GeV. This allows access to double Higgs and $t\bar{t}H$ production channels and hence, provides a way to perform higher precision studies of Higgs self-coupling and top Yukawa coupling among other electroweak parameters. The ERL design also boasts a more energy efficient method of reaching higher energies and higher luminosities compared to other e^+e^- collider designs. Additionally, ERL e^+e^- collider also provides access to polarization of the beams as a variable to study its effects on particle interactions such as the yield of di-higgs events.

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Date submitted: 10 Jan 2021

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