Contribution ID: **317** Type: **Parallel session talk**

Future Colliders using Recycling Energy-Recovery Linacs

Wednesday 23 August 2023 17:55 (20 minutes)

In this presentation I plan to discuss potential offered by Energy-Recovery Linacs (ERLs) and particle recycling for boosting luminosity in high-energy electron-positions and lepton-hadron colliders. I will start from presenting several proposed ERL-based colliders and compare them with more traditional, but better developed concept of FCCee, ILC and CLIC. ERL-based colliders have promise not only of significantly higher luminosity, but also of higher energy efficiency measured in units of luminosity divided by the consumed AC power. Addition of recycling collided particles and their recuperations in damping ring removes insane ILC/CLIC appetite for fresh positions and offers high degrees of polarization in colliding beams.
Presentation will cover similarities and distinctions between linear and re-circulating ERL concepts with focus on their costs, energy efficiency and energy reach. Two examples of HIGS ERL-based factory located in LHC and FCC tunnels will be compared with two concepts of linear ERL colliders.
Status of ERLs worldwide will be briefly review and technical challenges facing this promising accelerator technology will be discussed. I will finish talk with discussion of possible technical breakthroughs which can make ERL technology more affordable and more attractive.

Collaboration / Activity

Future e+e- colliders

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