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# High order mode analysis in energy recovery linac based on an energy budget model

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Energy Recovery linear accelerator (ERL) light source facilities based on superconducting radiofrequency (SRF) are deemed of the most resplendent techniques in the future of accelerator physics. Running in a continuous waves mode with a high repetition rate for a long timescale, we discuss High order modes (HOMs) analysis in a two-pass two-way ERL scheme where acceleration and deceleration of electron bunches are supported by a standing wave structure of the RF cavity. The analysis reported in this paper is based on differential equations that describe the beam dynamics (BD) to overcome the limitations imposed by high currents and insure energy recuperation over millions of interactions.

## Funding Agency

## Footnotes

## I have read and accept the Privacy Policy Statement

Yes

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