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## Avoiding overcooled ion beams by exciting energy spread through electron cooling

*Tuesday 3 June 2025 16:00 (2 hours)*

Ion accelerators use electron cooling to improve luminosity and beam lifetime. However, extremely low momentum spread in a cold beam weakens Landau damping, enabling the development of instabilities and potentially decreasing lifetime. To combat this, the NICA Booster electron cooling system allows to generate electron beams with oscillating energy to increase the momentum spread in ion beams. Here we describe the implementation of the energy oscillation technique and provide numerical calculations predicting the achievable momentum spread.

### Footnotes

### Paper preparation format

LaTeX

### Region represented

Asia

### Funding Agency

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