



Contribution ID: 1515 Contribution code: TUPC21

Type: **Poster Presentation**

## Design optimization of a dual energy electron storage ring cooler for improved cooling performance

*Tuesday, 21 May 2024 16:00 (2 hours)*

A dual energy electron storage ring cooler was proposed to maintain a good hadron beam quality against intra-beam scattering and all heating sources in a collider. This configuration has two energy loops. Electron beam in the low energy loop extracts heat away from the hadron beam through Coulomb interaction, while electron beam in the high energy loop loses heat through its intrinsic synchrotron radiation damping. Early studies of this concept show promising results and demonstrate its validity. This paper presented further optimization of optics design and parameters, and evaluation of improved cooling performance.

### Footnotes

### Funding Agency

Work supported by UT-Battelle, LLC, under contract DE-AC05-00OR22725 and by Jefferson Science Associates, LLC, under contract DE-AC05-06OR23177.

### Paper preparation format

### Region represented

North America

**Primary author:** LIN, Fanglei (Oak Ridge National Laboratory)

**Co-authors:** KRAFFT, Geoffrey (Thomas Jefferson National Accelerator Facility); ZHANG, He (Thomas Jefferson National Accelerator Facility); GUO, Jiquan (Thomas Jefferson National Accelerator Facility); BENSON, Stephen (Thomas Jefferson National Accelerator Facility); MOROZOV, Vasilii (Oak Ridge National Laboratory); ZHANG, Yuhong (Thomas Jefferson National Accelerator Facility)

**Presenter:** LIN, Fanglei (Oak Ridge National Laboratory)

**Session Classification:** Tuesday Poster Session

**Track Classification:** MC1: Colliders and other Particle and Nuclear and Physics Accelerators:  
MC1.A11 Beam Cooling