Contribution ID: **445** Contribution code: **SUTD01** Type: **Tutorial**

High brightness electron injectors

Sunday 10 August 2025 10:30 (2h 30m)

High-brightness electron injectors are foundational to the performance of modern particle accelerators, enabling applications from X-ray free-electron lasers to ultrafast electron diffraction and advanced accelerator concepts. This tutorial will provide an overview of the physics and design principles underlying high-brightness injectors, including photocathode radiofrequency (RF) guns, beam emittance preservation, space-charge effects, and brightness optimization strategies. We will review state-of-the-art injector technologies, diagnostic techniques, and recent advances in cathode materials and RF structures. The tutorial is aimed at graduate students, early-career researchers, and accelerator professionals seeking a deeper understanding of injector systems and their role in driving next-generation accelerator performance.

Please consider my poster for contributed oral presentation

No

Would you like to submit this poster in student poster session on Sunday (August 10th)

No

Footnotes

Funding Agency

I have read and accept the Privacy Policy Statement

Yes

Authors: MAXSON, Jared (Cornell University); MUSUMECI, Pietro (University of California, Los Angeles)

Presenters: MAXSON, Jared (Cornell University); MUSUMECI, Pietro (University of California, Los Angeles)

Session Classification: Sunday Tutorial

Track Classification: MC9 - Tutorials