Karlsruher Institut für Technologie

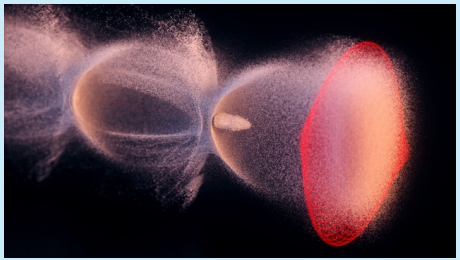
IBPT
Institute for Beam Physics and Technology

Development of a transferline for LPA-generated electron bunches to a compact storage ring

Bastian Härer

The LPA injector collaboration

- Collaboration between DESY and KIT within ATHENA$_e$



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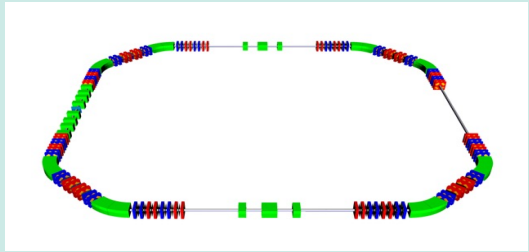
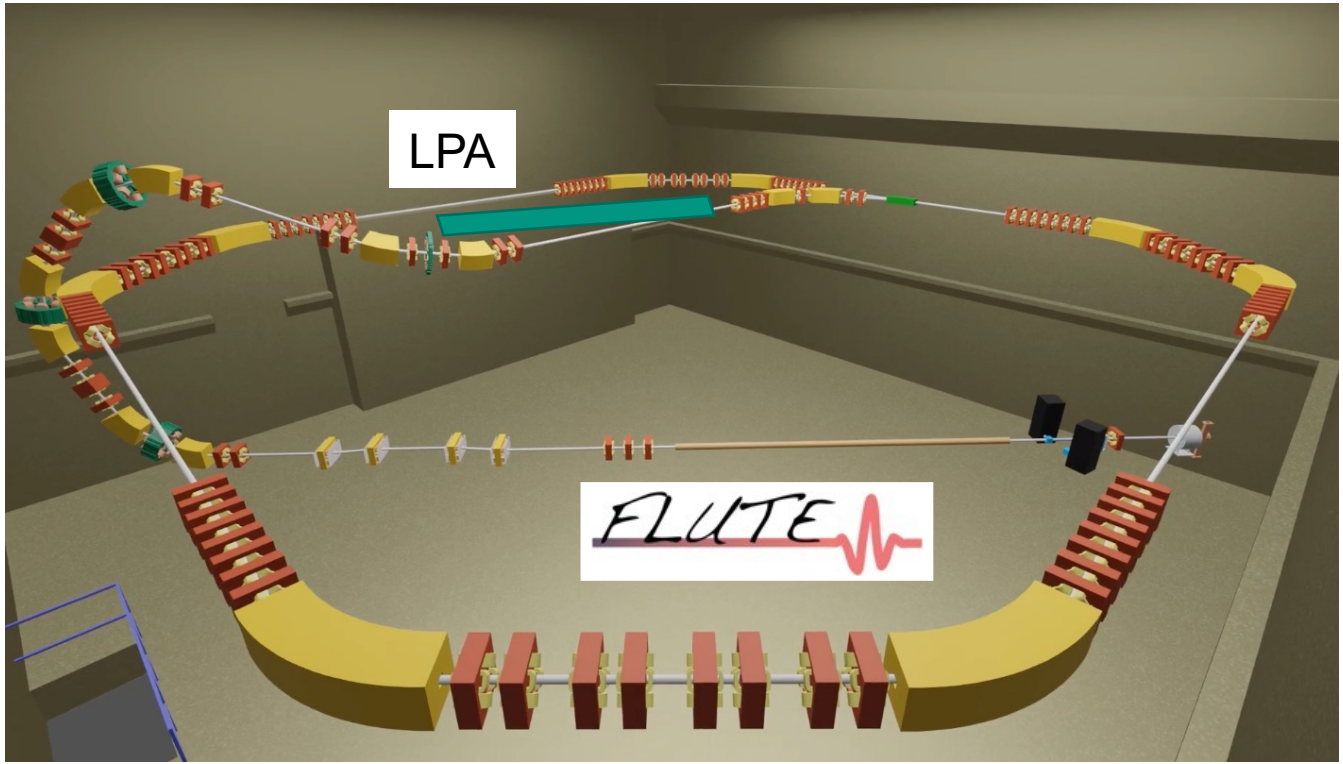
Design, setup and operation of a laser-plasma injector with stable, reproducible high quality electron beams



Design of a high acceptance storage ring and transferline. Demonstrate injection of LPA beams into compact storage ring.

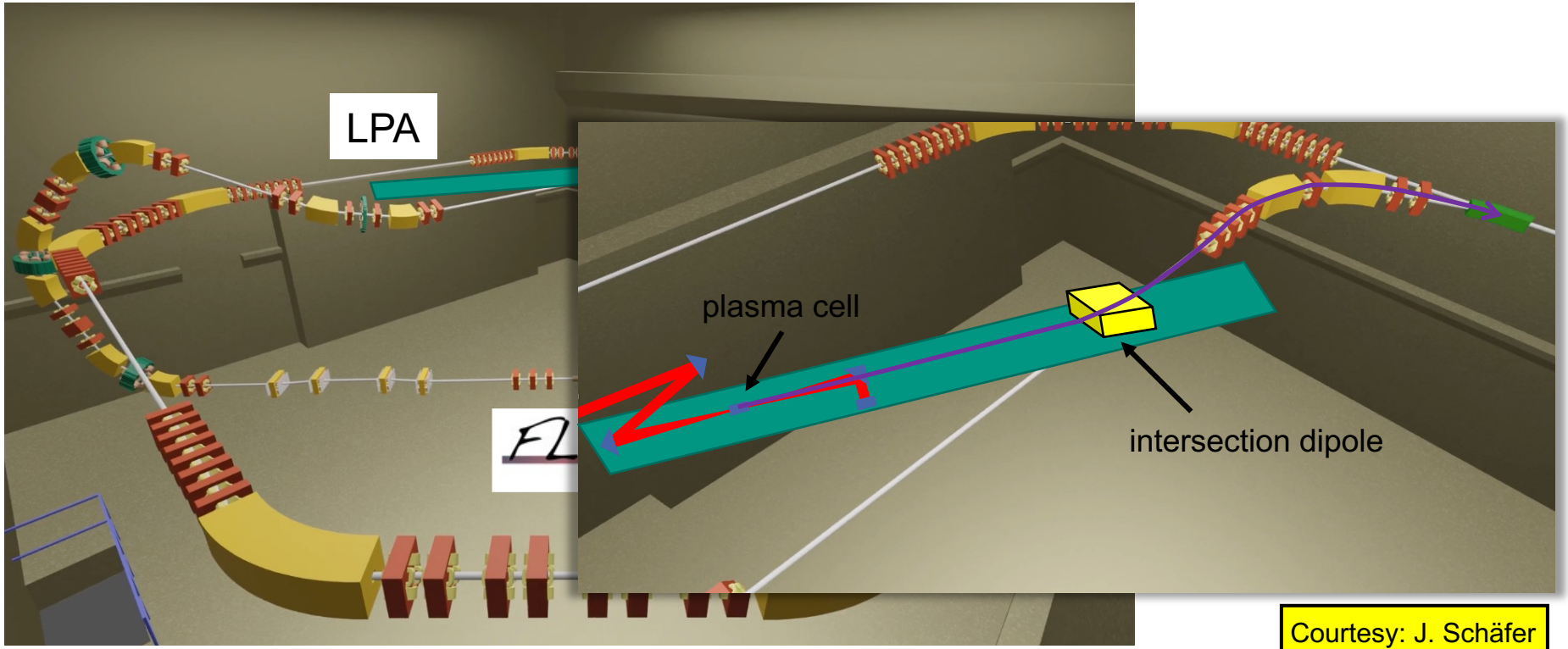
*Courtesy: S. Jalas, M. Kirchen, DESY

Transfer lines for two injectors



Courtesy: J. Schäfer

Transfer lines for two injectors



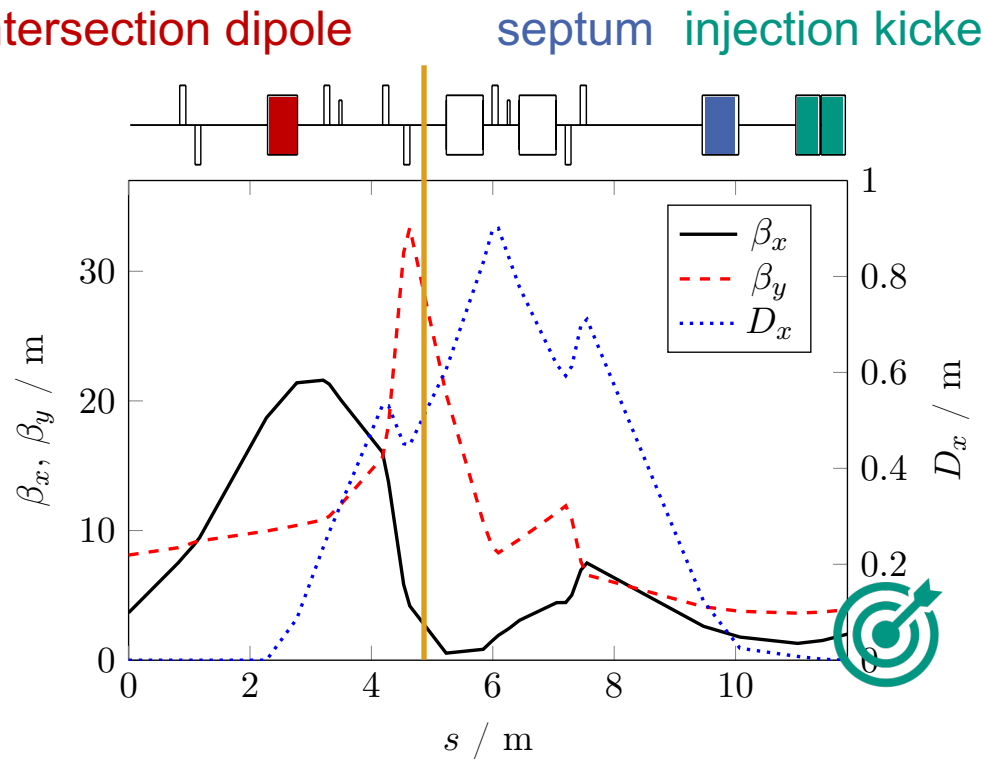
Courtesy: J. Schäfer

First beam dynamics studies

- Starting 2 m behind plasma cell with beam collimated by 2 quadrupoles
- Optics functions matched at injection point
- “Energy analyzer” (movable collimator at position with high dispersion)

Current issues

- Very small values of horizontal betafuntion (~14 cm)
- Chromatic correction required?
- Focused or collimated LPA beam?



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Thank you for your attention!