

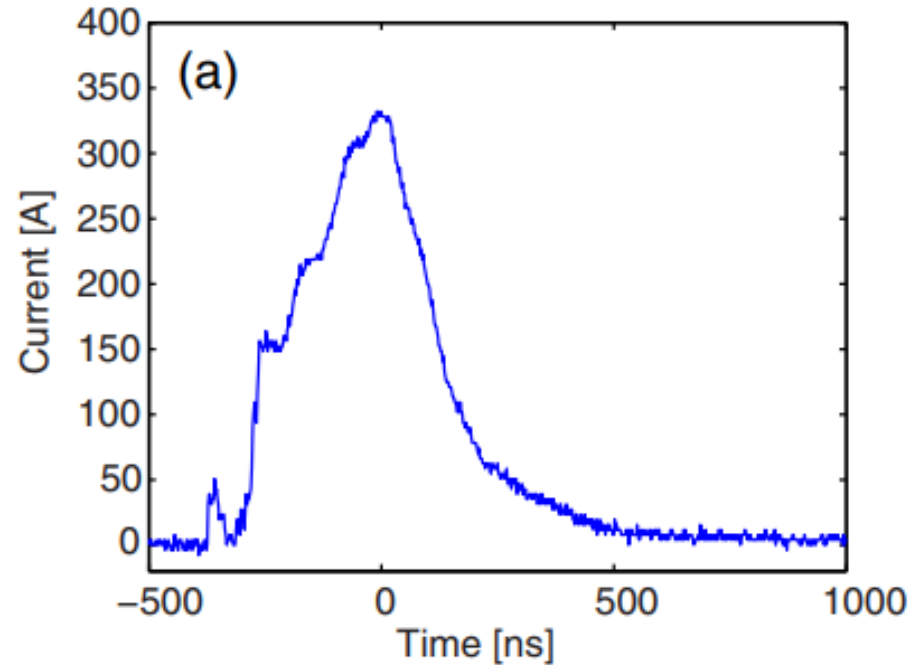
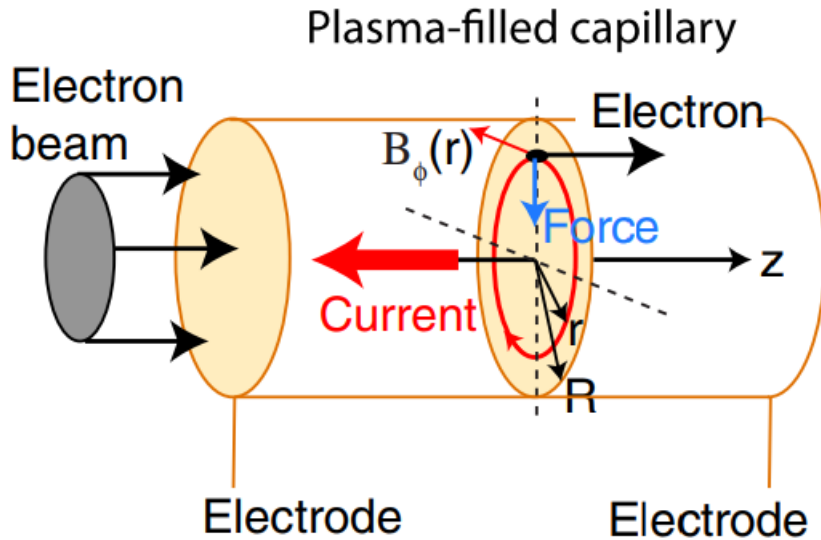
Plasma Lens: Possible alternative OMD at the ILC (work in progress)

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Motivation:

- OMD alternative to flux concentrator (FC) & quarter wave transformer (QWT) at ILC by M. Fukuda (today's talk at 10.30 am!)
- High potential for positron yield improvement due to **azimuthal** magnetic field
(→ radially symmetric, decreased chromatic aberration & focal length)
- Lots of on-site expertise at DESY and Uni HH (Dr. Floettmann, Dr. Osterhoff, Prof. Gruener)
- If simulations are promising:
→ prototype at DESY-site possible

Principle of an Active Plasma Lens:



- Gas filled capillary (e.g. with H_2)
- Applying voltage pulse (some kV) by electrodes
 - Ionization: gas ions + e^- = plasma
 - Axial electric discharge current pulse (some 100 A)
 - Azimuthal B-field (similar to an ordinary wire)
 - Radially symmetric focussing of particle beam (little interaction with plasma)

Outlook:

- Simulations: (work in progress)
 - Programm:
„A Space Charge Tracking Algorithm“ (ASTRA)
programmed by K. Floettmann
 - Positron Distribution:
for Ti (& W26Re)
simulated by M. Fukuda
 - OMD:
 1. Plasma Lens
optimization by M. Formela & N. Hamann
 2. QWT (& FC)
designed/simulated by W. Liu & M. Fukuda
- Experiments: (possibility)
 - Prototyping

Thank you for your Attention!