ACCELERATOR SEMINAR

Andre Michel

IAP, Goethe University Frankfurt

Thursday, 10. November 2022 at 4 pm

Hybrid Seminar

Seminarraum Theorie (SB3 3.170a) + ZOOM

Zoom: (ID: 646 6669 3133/ PW: 482361)

Setup and Investigation of a Plasma Window for Intense Particle Beam Transmission to High Pressure Targets

With an ever-growing enhancement of particle beam intensities and energies in accelerators around the world, a reliable vacuum to high-pressure-target separation technique is strongly needed where common separation techniques such as differential pumping stages or solid membranes might fail. A plasma window, first introduced by A. Hershcovitch, offers the advantage of a membraneless particle beam transmission from low- to high pressurized or highly activated areas like production targets for secondary particles or gas jet targets.

At the plasmaphysics de partment of Goethe University Frankfurt a plasma window was developed and successfully tested during the 2022 GSI UNILAC beamtime, utilizing an 48Ca10+ ion beam at 4.8MeV/u -- therefore being the world's first plasma window setup proving its applicability on the transmission of heavy ion beams.

This talk presents the plasma physical properties, electrical parameters and the pressure separating properties of the developed setup, its underlying working mechanisms as well as the characteristics of the transmitted ion beam.

Coordinator: Claude Krantz, Janet Schmidt
Secretary: Larissa Birli
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