K 2: Pulsed Power

Zeit: Montag 15:40–16:00 Raum: HZO 40

K 2.1 Mo 15:40 HZO 40

Development of a light-gas gun as external driver for matter properties studies at GSI/FAIR — Michael Endres[1], Serban Udrea[2], Yana Hitzel[1], and •Dieter H.H. Hoffmann[1] — [1]Teschniche Universität Darmstadt, Darmstadt, Germany — [2]Goethe-Universität Frankfurt, Frankfurt, Germany

For first day experiments at the new ion accelarator facilty FAIR at GSI in Darmstadt a light-gas gun is in devolpment as external driver for shock-loading experiments. At FAIR a novel diagnostic system the proton microscope (PRIOR) will use high energy protons for radiography. Thus the ion accelerator will be used for accelerating the protons for diagnostics an external driver for creating of high energy density states is needed.

At the Technische Universität Darmstadt the design and realisation of a two stage light-gas gun as a driver for flyer acceleration is ongoing. The first stage consists of four pistons driven by methane combustion. These pistons compress and heat up Helium in the second stage. The Helium then is supposed to accelerate a sabot carrying a flyer. According to present estimations the two stage device could accelerate 3 g loads up to about 3 km/s. The flyers will shock load different types of targets. The resulting material states should be investigated by a combination of proton radiography and other means.