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First plasma physics experiments

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The upcoming Facility for Antiproton and Ion Research (FAIR), currently under construction at the Helmholtz Center for Heavy-Ion Research GSI (Darmstadt, Germany), will offer heavy ion beams at unprecedented intensities. One of the research pillars within the multi-faceted scientific program at FAIR is the area of dense plasmas. A variety of schemes has been proposed to generate matter at High Energy Density conditions using the intense heavy-ion pulses delivered by the FAIR accelerator complex. This promises novel and unique approaches for accurate studies of matter under extreme conditions. Alternatively, FAIR proton beams can be used to radiograph large, dense plasmas. Already the parameters of the early ion beams expected when FAIR will go into operation will enable first experiments demonstrating these exciting experimental possibilities.

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