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Atomic, Plasma Physics and Applications (APPA) at FAIR

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The international Facility for Antiproton and Ion Research (FAIR, www.fair-center.eu) is currently under construction at the site of the GSI Helmholtzzentrum für Schwerionenforschung in Darmstadt, Germany. After its completion in 2024/2025 FAIR will provide heavy-ion beams of highest intensities to a diverse set of research fields such as hadron physics, nuclear astrophysics, atomic physics, plasma physics, materials science or radiation biology, to name a few. Various scientific collaborations have gathered under the four research pillars of FAIR, i.e., APPA, CBM, NUSTAR and PANDA. In my talk, I will focus on APPA (Atomic and Plasma Physics and Applications) which represents more than 600 scientists from more than 30 countries. Under the umbrella of APPA, the international collaborations SPARC (atomic physics), HED@FAIR (plasma physics) and BIOMAT (biophysics and materials science) pursue a broad interdisciplinary research program [Nucl. Instrum. Methods B 365 (2015) 680] which addresses all FAIR relevant aspects of the electromagnetic interaction and which employs nearly the entire research infrastructure of FAIR, in particular, the full ion-energy range - from rest up to several GeV - provided by the FAIR accelerators. Large parts of this research program are driven by BMBF-funded German university groups (see appa-rd.fair-center.eu) who bring in their expertise for developing, setting up and exploiting cutting-edge instrumentation at FAIR.

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