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Development status of a levitated dipole experiment for pair-plasma production — •Haruhiko Saitoh[1], Juliane Horn-Stanja[1], Eve V. Stenson[1], Uwe Hergenhahn[1], Thomas Sunn Pedersen[1], Markus Singer[2], Matthew R. Stoneking[3], and Nagato Yanagi[4] — [1]Max-Planck-Institut für Plasmaphysik — [2]Technische Universität München — [3]Lawrence University, USA — [4]National Institute for Fusion Science, Japan

Magnetic dipole is a simple and most common field configuration in the Universe, which generates a variety of plasma phenomena in a strongly inhomogeneous magnetic field. One of scientific applications of the dipole field is its usage as a trapping geometry for electron-positron pair-plasmas. For this purpose, we, the APEX (A Positron Electron Experiment) collaboration [1], is developing a compact levitated dipole device, APEX-D, to be operated at the NEPOMUC slow positron facility [2]. In order to minimize perturbations to plasmas, the superconducting dipole field coil (F coil, "F" for floating) of APEX-D will be magnetically levitated in a vacuum chamber. We plan to fabricate a Bi-2223 high-temperature superconducting (HTS) F coil that is magnetically levitated by using a feedback-controlled levitation coil (L coil), after inductive excitation of a persistent current in the F coil. We report design studies and status of development on the APEX-D project.

[1] T. Sunn Pedersen et al., New J. Physics **14**, 035010 (2012).
[2] C. Hugenschmidt et al., New J. Physics **14**, 055027 (2012).

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