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Conceptual design of the 3D magnetic field configuration relevant to the magnetopause reconnection in the SPERF. AOHUA MAO, Harbin Institute of Technology, HANTAO JI, YANG REN, Princeton University, PENG E, ZHIBIN WANG, QINGMEI XIAO, Harbin Institute of Technology, CHIJIE XIAO, Peking University — A new terrella device, the Space Plasma Environment Research Facility (SPERF), is designed and under construction in China, with Asymmetric Reconnection EXperiment (AREX) as one component to study the interaction between the magnetosheath and magnetosphere plasmas. AREX will provide a unique platform for studying asymmetric magnetic reconnection relevant to the magnetopause, via a set of coils for simulating "solar-wind-side" magnetosheath field and a dipole field on the "magnetosphere-side". Thus it could be able to investigate a range of important issues in the magnetosphere geometry, such as the electron and ion-scale dynamics in the current sheet, particle and energy transfer from magnetosheath to magnetosphere, particle energization/heating during magnetic reconnection, 3D and asymmetric effects in fast reconnection, and so on. The plasma is generated by two flux cores at the "magnetosheath-side" and one electron cyclotron resonance source at the "magnetosphere-side". Different kinds of coils with specific current driven functions, as well as advanced diagnostics are designed. Motivation, overview of the AREX design and reconnection scenarios will be discussed.

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