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FLARE: A New User Facility for Laboratory Studies of Multiple-Scale Physics of Magnetic Reconnection and Related Phenomena in Heliophysics and Astrophysics H. JI, A. BHATTACHARJEE, A. GOODMAN, S. PRAGER, Princeton U., W. DAUGHTON, LANL, R. CUTLER, W. FOX, F. HOFFMANN, M. KALISH, T. KOZUB, J. JARA-ALMONTE, C. MYERS, Y. REN, P. SLOBODA, M. YAMADA, J. YOO, PPPL, S.D. BALE, UC-Berkeley, T. CARTER, S. DORFMAN, UCLA, J. DRAKE, U. Maryland, J. EGEDAL, J. SARFF, J. WALLACE, U. Wisconsin — The FLARE device (Facility for Laboratory Reconnection Experiments; flare.pppl.gov) is a new laboratory experiment under construction at Princeton with first plasmas expected in the fall of 2017, based on the design of Magnetic Reconnection Experiment (MRX; mrx.pppl.gov) with much extended parameter ranges. Its main objective is to provide an experimental platform for the studies of magnetic reconnection and related phenomena in the multiple X-line regimes directly relevant to space, solar, astrophysical and fusion plasmas. The main diagnostics is an extensive set of magnetic probe arrays, simultaneously covering multiple scales from local electron scales ($\sim$2 mm), to intermediate ion scales ($\sim$10 cm), and global MHD scales ($\sim$1 m). Specific example space physics topics which can be studied on FLARE will be discussed.

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