

Abstract Submitted  
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**A new linear plasma device for various edge plasma studies at SWIP**<sup>1</sup> MIN XU, PENGFEI ZHENG, Southwestern Institute of Physics, GEORGE TYNAN, Jacobs School of Engineering, UC San Diego, TONG CHE, ZHANHUI WANG, DONG GUO, RAN WEI, Southwestern Institute of Physics — To facilitate the plasma-material interactions (PMI) studies, Southwestern Institute of Physics (SWIP) has constructed a linear plasma device. It is comprised of a source chamber ( $\Phi$  0.4 m), a target chamber ( $\Phi$  0.9 m), 15 magnets with different sizes, and power supplies with the total power of a few hundred kilowatts, etc. A maximum magnetic field of 0.3 Tesla along the axial direction can be produced. The current of each of the 15 magnets can be independently controlled. More than 60 ports are available for diagnostics, with the sizes vary from  $\Phi$  50 mm to  $\Phi$  150 mm. Rectangular ports of 190 mm $\times$ 270 mm are also available. 12 ports looking at the sample holder are specially designed for ion beam injection, of which the axes are 25 to the chamber axis. The device is equipped with a LaB6 hot cathode plasma source, which is able to generate steady-state H/D/He plasmas with a diameter of  $\sim\Phi$  100 mm, density of  $\sim 1 \times 10^{19} \text{ m}^{-3}$ , and a particle flux of  $10^{22} \sim 10^{23} \text{ n/m}^2 \cdot \text{s}$ . The electron temperature is usually  $\sim$  a few eV. Further, a Helicon RF plasma source is also planned for plasma transport studies.

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