

Abstract Submitted
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Spatial structures of intermittent local electron flux in a linear ECR plasma¹ SHINJI YOSHIMURA, National Institute for Fusion Science, KENICHIRO TERASAKA, EIKI TANAKA, Kyushu University, MITSUTOSHI ARAMAKI, Nagoya University, MASAYOSHI Y. TANAKA, Kyushu University — Spontaneous generation of intermittent local electron flux has been observed in a linear electron-cyclotron-resonance (ECR) plasma produced in the HYPER-I device (NIFS, Japan). Statistical analysis of temporal variation of floating potential on a Langmuir probe revealed that the phenomenon is characterized by a stationary Poisson process. In order to measure 2D spatial structures of the electron flux, the High-Impedance Wire Grid (HIWG) that consists of 16 electrically-floated electrodes (8 horizontal and 8 vertical) has been developed. By evaluating the magnitude of the flux at each lattice point as the geometric mean of the signal amplitudes on corresponding pair of electrodes at a given time, a snapshot of 2D intensity distribution of the electron flux can be reconstructed. The electron flux has a circular cross-section of which diameter is typically about 30 mm. End view images taken by an ICCD camera with an optical filter also show local enhancement of line emissions of ions and neutrals in the circular region in which the intermittent electron flux enhancement occurs.

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