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Imaging of laboratory magnetospheric plasmas using coherence imaging technique MASAKI NISHIURA, NORIKI TAKAHASHI, ZENSHO YOSHIDA, KAORI NAKAMURA, The University of Tokyo, YOHEI KAWAZURA, Oxford University, NAOKI KENMOCHI, MASATAKA NAKATSUKA, TETSUYA SUGATA, SHOTARO KATSURA, The University of Tokyo, JOHN HOWARD, Australian National University — The ring trap 1 (RT-1) device creates a laboratory magnetosphere for the studies on plasma physics and advanced nuclear fusion. A levitated superconducting coil produces magnetic dipole fields that realize a high beta plasma confinement that is motivated by self-organized plasmas in planetary magnetospheres. The electron cyclotron resonance heating (ECRH) with 8.2 GHz and 50 kW produces the plasmas with hot electrons in a few ten keV range. The electrons contribute to the local electron beta that exceeded 1 in RT-1. For the ion heating, ion cyclotron range of frequencies (ICRF) heating with 2–4 MHz and 10 kW has been performed in RT-1. The radial profile of ion temperature by a spectroscopic measurement indicates the signature of ion heating. In the holistic point of view, a coherence imaging system has been implemented for imaging the entire ion dynamics in the laboratory magnetosphere. The diagnostic system and obtained results will be presented.

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