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Analysis of Plasma Behavior in the Localized Non-Axisymmetric B Region of the GAMMA 10 Tandem Mirror

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Ion current in ion drift direction as well as the plasma shift in that direction in the localized non-axisymmetric magnetic field region of the anchor cell of the GAMMA 10 tandem mirror were measured. In addition, electron current perpendicular to the ion drift direction was found in this region. To understand these plasma behaviors, relevant kinetic properties of plasma particles are analyzed numerically. Numerical analysis indicates that the ion drift due to the non-axisymmetric magnetic field and electron displacement due to small angle Coulomb scattering during passing through drifted ions are the possible candidates of the observed plasma phenomenon.

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Primary author: Dr ISLAM, Md. Khairul (Bangladesh Atomic Energy Commission)

Co-authors: Prof. YATSU, Kiyoshi (Plasma Research Center, University of Tsukuba, Tsukuba, Ibaraki 305-8577, Japan); Prof. NAKASHIMA, Yousuke (Plasma Research Center, University of Tsukuba, Tsukuba, Ibaraki 305-8577, Japan)

Presenter: Dr ISLAM, Md. Khairul (Bangladesh Atomic Energy Commission)

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