

Abstract Submitted
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Modeling the radial electric field and comparison with HIBP measurements in TJ-II stellarator CESAR GUTIERREZ-TAPIA, ININ, Mexico, JULIO J. MARTINELL, ICN-UNAM, Mexico, DANIEL LOPEZ-BRUNA, CIEMAT, Spain, ALEXANDER MELNIKOV, Kurchatov Institute, Russia — Neoclassical transport calculations from three different models representing regimes with a wide variation of collisionality are used for estimating the radial electric field in the TJ-II stellarator and the results are compared with measurements by Heavy Ion Beam Probe (HIBP). In particular we also use a simplified model that considers only the non-axisymmetric contribution to the transport, due to Kovrizhnykh [1], to perform analytical calculations for given density and temperature profiles taken from experiment. These encompass a wide range of densities corresponding to ECH and NBI regimes. Quite satisfactory agreement between modeling and experimental data is shown from both the numerical models and the analytical calculations, for all regimes thus allowing to conclude that the neoclassical transport is the main contributor to the formation of the radial electric field in TJ-II. The analytical approach permits a good understanding about the conditions that have to satisfy the steady states in order to obtain real roots for the radial electric field over all the plasma cross section, that in addition are in agreement with experimental HIBP measurements.

[1] L.M. Kovrizhnykh, Plasma Phys. Rep. **31**, 14 (2005)

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