GYROKINETIC itg transport simulations OF T-10 plasmas with ohmic heating [[1]](#footnote-1)\*)

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The ohmic tokamak discharge T-10#71568 has been selected for carrying out the first Ion Temperature Gradient (ITG) gyrokinetic plasma transport simulations on the federal collective usage Complex for Simulation and Data Processing for Mega-science Facilities at NRC “Kurchatov Institute”.

The experimental measurements include the electron density and temperature profiles, ion temperature profiles with a large gradient leading to ITG-driven turbulence, as well as Carbon and Oxygen impurity density profiles measured with active charge exchange recombination spectroscopy [1]. Radial ion and electron power balances have been evaluated using the ASTRA transport code [2].

Three-dimensional quasi-linear and nonlinear ion and electron heat fluxes have been computed with the gyrokinetic GENE code [3]. Comparison of GENE simulation results with the LLNL GK fit scaling has been performed for the Cyclone DIII-D base test case conditions considering different equilibrium models [4]. Good agreement has been obtained between the GENE gyrokinetic results and the ASTRA based experimental fluxes with reduced impurity densities.

References

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1. \*) [abstracts of this report in Russian](http://www.fpl.gpi.ru/Zvenigorod/XLIX/Mu/ru/AA-Isaev.docx) [↑](#footnote-ref-1)