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Gyrokinetic study of electron transport in NSTX using XGC
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, Princeton Plasma Physics Laboratory — Electron anomalous transport may play
a significant role in the plasma confinement in NSTX. In such a situation it becomes
important to identify the origin of the electron heat and particle transport and find
ways of reducing it. Among the possible electron modes, the electron temperature
gradient mode (ETG) can be important both in the core and edge pedestal plasmas.
Here we aim to study the role of ETG on the anomalous loss of electrons in the
NSTX tokamak with the gyrokinetic code XGC. XGC is an X-point included full-f
gyrokinetic code which can also be run in the delta-f limit. We present a benchmark
study of the ETG mode against those from existing flux tube gyrokinetic codes in
the limit of simple circular ad hoc model similar to the cyclone base case. Simula-
tions for actual experimental profiles and parameters corresponding to the NSTX
will also be reported.

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