

Abstract Submitted
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Local temperature effects in the helical scrape-off layer of startup plasmas at Wendelstein 7-X due to N seeding¹ TULLIO BARBUI, F. EFFENBERG, O. SCHMITZ, University of Wisconsin-Madison, M. KRYCHOWIAK, R. KÖNIG, S. KLOSE, D. ZHANG, IPP Greifswald, J. M. MUÑOZ BURGOS, Johns Hopkins University, P. DREWS, Y. LIANG, S. LIU, O. NEUBAUER, A. TERRA, Forschungszentrum Jülich GmbH, B. SCHWEER, Ecole Royal Militaire, B.D. BLACKWELL, Australian National University, W7-X TEAM (IPP GREIFSWALD TEAM) — N seeding discharges have been performed at Wendelstein 7-X during its startup limiter campaign. In this study, the cooling effects on the local electron temperature T_e measured by three diagnostic systems are discussed, which have a defined alignment in the helical SOL topology during the W7-X limiter phase. Radial T_e profiles obtained from a thermal helium beam and T_e measurements from a reciprocating Langmuir probe system, both located inside the same flux tube as the N injection system, are compared to T_e from Langmuir probes installed on a limiter tile, which is not directly connected magnetically to the injection flux channel. This setup enables to study the N cooling effect in the flux tube geometry as an important test which impacts the 3-D topology in a low shear stellarator and the edge cooling symmetry. A clear reduction of T_e in the entire SOL has been measured as a reaction to the N seeding and the relative variation in the temperature, however, depends on the actual placing of the diagnostic in the flux tube geometry and on the distances from the N injection point. A direct comparison of the measurements to EMC3-EIRENE modeling will be presented.

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