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ASDEX Upgrade Experiments and Validation of Theoretical Transport Models for the Prediction of ITER PFPO-1 Plasmas CHRISTIAN KIEFER, Max Planck Institute for Plasma Physics, University of Ulm, CLEMENTE ANGIONI, GIOVANNI TARDINI, NICOLA BONANOMI, EMILIANO FABLE, Max Planck Institute for Plasma Physics, BENEDIKT GEIGER, Max Planck Institute for Plasma Physics, University of Wisconsin-Madison, THOMAS PÜTTERICH, PHILIP SCHNEIDER, Max Planck Institute for Plasma Physics, EUROFUSION MST1 TEAM, ASDEX UPGRADE TEAM — New experimental results from ASDEX Upgrade discharges in H and D are presented and applied to the validation of the quasi-linear turbulent transport models TGLF and QuaLiKiz. Linear gyrokinetic calculations were performed for verification. The dataset comprises ECRH power scans from the low to the intermediate density range, covering the turbulent transport conditions expected during the ITER PFPO-1 phase. For the success of the initial phase of ITER operation, reliable predictions of the central electron temperature (for X3 ECRH absorption) and of the ion heat flux at the periphery (for H-mode access) are essential. These are completely determined by the electron and ion turbulent heat transport in the core. While TGLF accurately reproduces the measured central electron temperature and the ion heat flux at the edge, QuaLiKiz tends to overpredict central T_e in TEM-dominated discharges. The source for this discrepancy is currently under investigation.

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