

Abstract Submitted
for the DPP19 Meeting of
The American Physical Society

Development of a QH-mode scenario on ASDEX Upgrade

ELEONORA VIEZZER, University of Seville, JOERG HOBIRK, IPP Garching, EMILIA SOLANO, CIEMAT, HENDRIK MEYER, UKAEA, PILAR CANO, University of Seville, MARCO CAVEDON, IPP Garching, DIEGO CRUZ, University of Seville, MIKE DUNNE, IPP Garching, JAVIER GONZALEZ, University of Seville, TIM HAPPEL, MARC MARASCHEK, IPP Garching, ANTOINE MERLE, EPFL, THERESA WILKS, PSFC MIT, ASDEX UPGRADE TEAM, EUROFUSSION MST1 TEAM — For future magnetic fusion devices, the mitigation or even full suppression of edge localized modes (ELMs) is required to avoid erosion of the divertor target plates from the heat and particle fluxes caused by a type-I ELM. The QH-mode has recently regained attention as alternative scenario as it is naturally ELM-free. The onset of the QH-mode is characterized by the edge harmonic oscillation (EHO) which increases the edge particle transport to allow natural stability against an ELM. Here we report on the development of the QH-mode in the all-metal AUG tokamak. The experiments were carried out in forward and reversed Ip/Bt. For the first time, low collisionality plasmas with up to 6 MW NBI heating were achieved in reversed field. In forward field, the most promising scenario has been identified in upper single null. Transient QH-mode phases up to 400ms have been obtained showing signatures of the EHO in various diagnostics. Analysis of the pedestal structure show that high ExB rotational shear was achieved at low density and high temperature, situating the pedestal close to the kink-peeling boundary.

Eleonora Viezzer
University of Seville

Date submitted: 16 Sep 2019

Electronic form version 1.4