

Abstract Submitted
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Predictive modelling of the impact of a radiative divertor on pedestal confinement on ASDEX Upgrade¹ MIKE DUNNE, STEFFEN POTZEL, MARCO WISCHMEIER, ELISABETH WOLFRUM, IPP-Garching, LORENZO FRASSINETTI, KTH, FELIX REIMOLD, FZ-Julich, EUROFUSION MST1 TEAM, ASDEX UPGRADE TEAM — In future devices, tailoring of the edge density profile and radiation profile for power exhaust control via a deuterium gas puff and extrinsic impurity seeding will be necessary. It has been observed on present day machines that high D fuelling can reduce the plasma stored energy while adding impurity seeding can act to improve confinement by up to 40%. This study presents a combination of observations and modelling completed on AUG with the aim of determining the mechanisms behind the confinement degradation with a gas puff and improvement with impurity seeding. In particular, predictive modelling, based on the EPED pedestal model, has been extensively used. Alterations of the temperature and density at the separatrix are found to have large impacts on pedestal stability. Measured changes in divertor properties are used to inform the direction and magnitude of these alterations, with experimentally relevant confinement changes being recovered via pressure profile shifts.

¹<http://www.euro-fusionscipub.org/mst1>

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