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Role of plasma shape in access to ELM suppression at low collisionality: First observation of ELM suppression in ASDEX Upgrade in a shape-matching identity experiment with DIII-D WOLFGANG SUTTROP, Max-Planck-Institut fuer Plasmaphysik, D-85740 Garching, Germany, RAFFI NAZIKIAN, Princeton Plasma Physics Laboratory, PO Box 451, Princeton, New Jers ey 08543-0451, U.S.A., ANDREW KIRK, CCFE, Culham Science Centre, Abingdon, Oxon, OX14 3DB, U.K. , ASDEX UPGRADE TEAM, DIII-D TEAM, EUROFUSION MST1 TEAM[1] — Controlled plasma shape scans at low pedestal collisionality $\nu^*_{\mathrm{ped}<0.4}$ in DIII-D reveal that the threshold of magnetic perturbation field strength for suppression of edge-localized modes (ELMs) depends on both upper and lower plasma triangularity. Similar plasmas with matching shape and matching plasma parameters have been performed in DIII-D and ASDEX Upgrade. In these discharges, stationary ELM suppression by magnetic perturbations is observed for the first time in ASDEX Upgrade.Despite different divertor geometry and different first wall materials in the two machines, these plasmas show many similarities: Complete ELM suppression occurs in a narrow windows around $q_{95} \approx 3.7$ with transitions to phases with "fuzzy" ELMs outside these windows, electron density and temperature profiles as well as the total pedestal pressure are well matched, while there are variations of other quantities such as impurity concentrations and impurity rotation frequencies. A first experiment with injection of tungsten shows that the tungsten impurity content in the plasma decays on the time scale of energy confinement.

[1]see http://www.euro-fusionscipub.org/mst1

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