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Experimental Investigation of Negative Triangularity Plasmas in the ASDEX Upgrade Tokamak TIM HAPPEL, THOMAS PÜTTERICH, JÖRG HOBIRK, HARTMUT ZOHM, THE ASDEX UPGRADE TEAM, Max Planck Institute for Plasma Physics — Recently, the negative triangularity tokamak (NTT) concept has received considerable attention because of several reasons: first, experimental results indicate that the plasma tends to stay in the low-confinement-mode (L-mode). If transitions into the high-confinement-mode (H-mode) are observed, the H-mode is characterized by high-frequency and small amplitude edge-localized-modes (ELMs). Furthermore, the energy confinement in an L-mode NTT has been observed to be close to or even above typical H-mode levels ($H_{98}(y,2) \geq 1$). These properties make the NTT an attractive option for a future fusion reactor.
In 2020, negative triangularity shapes including an active X-point have been developed on the ASDEX Upgrade tokamak. In order to avoid H-mode, these experiments were run with the ion grad B drift pointing away from the active X-point, and the value of the upper triangularity has been pushed to $\delta_{\text{upper}} = -0.25$. Heating power scans have been performed encompassing different ion- to electron heating ratios. First results indicate good confinement and an L-mode typical edge with low impurity confinement and no large ELMs, in line with previous observations from other machines. An outlook indicating next steps and further research is given.

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