Abstract Submitted
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Reactor-relevant characteristics of DIII-D negative triangularity discharges[1] M.E. AUSTIN, U. Texas, A. MARINONI, MIT, J.S. DEGRASSIE, C.C. PETTY, S.P. SMITH, GA, R. XIE, U. Texas — A highlight of DIII-D experiments with negative triangularity (NT) shaped discharges was H-mode level confinement at significantly high beta with L-mode edge conditions[1]. Beyond the favorable energy confinement, indications of improved momentum confinement were observed in NT discharges compared to matched positive triangularity (PT) cases. Co-NBI-heated discharges had higher core rotation and rotational shear than predicted from scaling laws while ECH-dominant discharges had toroidal rotation within the expected range. Additionally, a comparison of bootstrap current between equivalent discharges showed somewhat higher bootstrap current that is more broadly distributed and without a peak at the edge in NT over PT Also, NT discharges exhibit 30-60% higher Shafranov shift than PT for the same plasma pressure. Overall the many positive characteristics of negative triangularity plasmas, with prospects for low consequence ELMs and a low-field side divertor, make it an attractive option for a reactor.

[1] Marinoni et al., Phys. Plasmas 26, 042515 (2019).

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Max Austin
University of Texas at Austin

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