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Exploring the Dependence of Edge/SOL Turbulence Suppression of First-wall Interaction in Negative Triangularity Plasmas on TCV (PhD Oral-24)[1] WOONGHEE HAN, MIT - PSFC, NICOLA OFFEDDU, EPFL - Lausanne, THEODORE GOLFINOPOULOS, MIT - PSFC, CHRISTIAN THEILER, EPFL - Lausanne, CEDRIC TSUI, JOSE BOEDO, Univ of California - San Diego, EARL MARMAR, MIT - PSFC, C-MOD TEAM, TCV TEAM — Magnetically confined fusion plasmas with a negative triangularity (δ) core shape are known to feature enhanced confinement as compared to standard, D-shaped plasmas. Recently, correlation electron cyclotron emission measurements on the TCV tokamak revealed that the confinement improvement is accompanied by reduced temperature and density fluctuations across most of the confined plasma. In this contribution, we extend these studies towards the edge/SOL region. Fluctuations in this region are measured with a newly commissioned Gas Puff Imaging diagnostic, a reciprocating probe, and wall Langmuir probes, and for triangularities in the range -0.7<δ<+0.68 in both limited and diverted ohmic L-mode plasmas. These measurements reveal a strong reduction in SOL fluctuation at sufficiently negative δ plasmas (δ<-0.25), and, surprisingly, an almost full suppression of plasma interaction with the first wall. Reasons for this suppression, which could have important implications for the prospects of negative δ as a reactor solution, are explored, pointing towards the role of reduced connection length intrinsic to negative δ.

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