Abstract Submitted
for the DPP19 Meeting of
The American Physical Society

Advances in negative-triangularity tokamak physics in TCV STEFANO CODA, STEPHAN BRUNNER, MATTEO FONTANA, ZHOUJI HUANG, AYLWIN IANTCHENKO, ANTOINE MERLE, GABRIELE MERLO, ANTOINE POCHELON, LAURIE PORTE, HOLGER REIMERDES, OLIVIER SAUTER, EPFL-SPC, Switzerland, MICHAEL FAITSCH, IPP Garching, Germany, THE TCV TEAM TEAM — The TCV tokamak has pioneered negative triangularity since the mid-1990's, reporting enhanced confinement in both Ohmic and ECRH L-mode scenarios. Local gyrokinetic simulations reproduced the effect near the plasma edge but not in the core where triangularity vanishes, motivating more recent global simulations. Experiment also shows a dominant role of the outermost 20% of the minor radius in determining the overall confinement with stiff core profiles. H-mode scenarios have also been developed, with more frequent and less virulent ELMs, explained by the closure of the ballooning second-stability region and a diminished pedestal stability threshold. Negative triangularity however also shrinks the heat-flux profile in the scrape-off layer. More recently, the ITER baseline β_N level (1.7) has been reached in L-mode with NBI. Turbulence has now been systematically compared at positive and negative triangularity using correlation ECE and phase-contrast imaging diagnostics, reaching inside mid-radius. Both report a significant reduction of turbulence with negative triangularity everywhere, in both TEM- and ITG-dominated regimes.

Stefano Coda
EPFL-SPC

Date submitted: 03 Jul 2019 Electronic form version 1.4