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Understanding TCV L-mode plasmas via global gyrokinetic GENE simulations GABRIELE MERLO, STEPHAN BRUNNER, STEFANO CODA, Swiss Plasma Center, CH-1015 Lausanne, Switzerland, TOBIAS GOERLER, Max-Planck-Intitut fr Plasmaphysik, D-85748 Garching, Germany, ZHOUJI HUANG, Swiss Plasma Center, CH-1015 Lausanne, Switzerland, FRANK JENKO, DANIEL TOLD, UCLA, Department of Physics and Astronomy, Los Angeles, CA 90095, USA, OLIVIER SAUTER, LAURENT VILLARD, Swiss Plasma Center, CH-1015 Lausanne, Switzerland — It is known that global effects can have a significant influence on turbulent transport driven by microintabilities, especially for small size machines like the TCV tokamak. The global version of the gyrokinetic GENE code has been extensively used to model TCV plasmas for which finite ρ^* effects are expected to be crucial in order to recover the experimentally observed behaviour. We will address in particular: (*i*) The effect of negative triangularity, which has been experimentally observed to lower up to a factor of two the heat flux through the lectron channel at all radial locations. Global effects and the inclusion of carbon impurities turn out to be the key elements required in order to match experiments and simulation results. (*ii*) The formation of either radially coherent or dispersive axisymmetric density fluctuations, experimentally interpreted as Geodesic Acoustic Modes. GENE simulations reproduce the observed behaviour and allow to conclude that the modification of safety factor alone cannot explain the transition between these two different fluctuation regimes.

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