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Ratchet and curvature pinch in turbulent plasmas MADALINA OLIMPIA VLAD, FLORIN SPINEANU, National Institute of Laser, Plasma and Radiation Physics, SADDRUDIN BENKADDA — We have shown that the gradient of the confining magnetic field, grad(B), generates a pinch (average velocity) in turbulent plasmas. It is a ratchet type process that appears in test particle approach due to the modification of guiding center trajectories. The ratchet pinch depends on the characteristics of the turbulence and changes its orientation along grad(B) from anti-parallel to parallel when trajectory trapping or eddying appears. Another effect of grad(B) is the compressibility of the ExB velocity field, which was shown to produce a pinch parallel with grad(B), the curvature pinch. The influence of grad(B) on trajectories is neglected in the derivation od the curvature pinch. We determine here the evolution of particle density taking into account both effects. We include in the model particle collisions and plasma rotation and determine their effects on the transport and on the peaking factor. The results are compared with the experimental data on impurity transport in tokamak plasmas.

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