

# The effect of diamagnetic drifts on the dynamics of turbulent transport

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Recently, much progress has been made toward understanding the fundamental dynamics of turbulent transport in the presence of sheared flows. The insights have come from following Lagrangian trajectories using both gyrokinetic simulations of ITG turbulence[1] and fluid models of drift-wave turbulence[2]. In this work, using the same tools, the impact of simple diamagnetic drifts on the dynamics of the transport is investigated using numerical simulations of 2D-turbulence in slab geometry with the BETA code. By itself, a diamagnetic drift velocity can have a significant an impact on the transport dynamics both with and across flow. However when coupled with a sheared flow additional dynamics are observed which could lead to interesting profile control tools if separately controlled. These new dynamics are in part the result of coherent structure formation localized to particular regions of the flows. The transport dynamics and possible uses will be discussed.

[1] R. Sanchez, D.E. Newman, et al PRL **101**, 205002 (2008)

[2] D.E. Newman, et al, Proc. of the 35th EPS Conf on Plasma Physics, ECA Vol. 32, p. 1.044 (2008)