

Abstract Submitted
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Role of magnetic shear in flow shear suppression EUN-JIN KIM,
University of Sheffield — Flow shear and magnetic shear are thought to be crucial in controlling anomalous transport in laboratory plasmas. In particular, turbulence quenching due to flow shear is believed to be indispensable for the formation of transport barrier and thus plasma confinement. Here, we investigate how magnetic shear interacts with flow shear, affecting turbulence regulation by flow shear in 3D RMHD turbulence [1]. Specifically, we show analytically that near the resonance surface, transport quenching by flow shear is weakened by magnetic shear as the latter interferes with shearing process. Anomalous particle transport thus becomes more efficient in the regime with stronger magnetic shear for a given flow shear while self-regulation of zonal flows becomes less effective. The results suggest that weak magnetic shear could be favorable for the formation of transport barrier.

[1] E. Kim, Phys. Plasmas, in press (2007)

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