Rapid generation of angular momentum in bounded magnetized plasma

WOUTER BOS, LMFA - CNRS, Ecole Centrale de Lyon - Universite de Lyon, France, SALAH NEFFAA, KAI SCHNEIDER, M2P2–CNRS & CMI, Universite de Provence, Marseille, France — Direct numerical simulations of two-dimensional decaying MHD turbulence in bounded domains show the rapid generation of angular momentum in non-axisymmetric geometries. It is found that magnetic fluctuations enhance this mechanism. The subsequent generation of a magnetic angular momentum or angular field is due to the relaxation of the flow towards an aligned state. For axi-symmetric geometries the generation of angular momentum is absent, nevertheless a weak angular field can be observed. The derived evolution equations for both angular momentum and angular field yield possible explanations for the observed behaviour.