

Abstract Submitted  
for the DFD20 Meeting of  
The American Physical Society

**Bounds on inertial transfer in saturated small-scale dynamos**

MORITZ LINKMANN, Univ of Edinburgh — The dimensionless dissipation coefficient  $\beta_u = \varepsilon_u L_f / U^3$  is an important quantity in non-conducting turbulent flows as it relates the viscous dissipation rate  $\varepsilon_u$  to the scale  $L_f$  at which kinetic energy is injected into the flow and the root-mean-square velocity  $U$ . As  $\beta_u$  expresses a relation between small-scale and large-scale dynamics, it can be interpreted as a measure of the inertial flux across scales in a turbulent flow. Here we investigate the same quantity for a saturated small-scale dynamo in order to assess the influence of a fluctuating magnetic field on the interscale inertial transfer. We obtain upper bounds on  $\beta_u$  for a saturated nonhelical dynamo as a function of Reynolds and magnetic Prandtl numbers.

Moritz Linkmann  
Univ of Edinburgh

Date submitted: 02 Aug 2020

Electronic form version 1.4