

READ ME File

MHD Turbulent box simulations run with the AREPO including gravity.

When using these simulations in scientific works, please refer to and cite: [Mocz et al. 2017](#), ApJ, 838, 40 and the CATS release paper (Burkhart et al. 2020). Additionally please cite Springel 2010, the original AREPO code paper.

The files are in HDF5 format and file name indicates the snapshot number where $t=0$ indicates no gravity and $t > 0$ indicates the time since gravity is turned on in units of the free fall time.

The simulations have been Uniformly regrided and the base grid has dimensions of 256x256x256.

B in the file name indicates the strength of the magnetic field in microGauss.

The simulations are performed using the moving-mesh quasi-Lagrangian AREPO code (Springel 2010). The moving mesh automatically adapts to the geometry of the physical system, and keeps the mass-resolution of each cell approximately constant. The code solves the ideal MHD equations, for which we have recently implemented (Mocz et al. 2016) an unstructured vector potential constrained transport (Yee 1966; Evans & Hawley 1988) solver to maintain the divergence-free property of the magnetic field. We accurately capture shocks via an HLLD (Miyoshi & Kusano 2005) Riemann solver. Self-gravity is calculated using a Tree-ParticleMesh scheme (Xu 1995). Turbulence is driven solenoidally in Fourier space on the largest spatial scales using an Ornstein Uhlenbeck process (Federrath et al. 2010; Bauer & Springel 2012; Federrath 2015). The simulations maintain turbulence driving the entire time.

More details can be found in : [Mocz et al. 2017](#), ApJ, 838, 40