For Usage:

Theses simulations are free to use with proper reference. Please include the following two references. Suggested text is

"These simulations were produced and originally presented by in Collins et al. (2012), and a further analysis was presented in Burkhart et al. (2015)"

Contact:

The data presented are reduced resolution, single resolution snapshots, for ease of manipulation and data transfer. If you are interested in higher resolution snapshots, either unigrid or full AMR, please email David C. Collins (dccollins@fsu.edu).

About:

The simulations presented here are 3d numerical experiments of isothermal, self-gravitating, supersonic MHD turbulence. Each simulation has an r.m.s. Mach number of 9, and the gravitational binding energy roughly equal to kinetic energy. Three values of the mean plasma β are used, 0.2, 2, and 20. The original root grid was 512^3 with four levels of additional adaptive mesh refinement (AMR). The data presented here are 256^3 reductions, with the full data available upon request.

The simulations were initially driven with solenoidal turbulence at 1024^3. They were then down-sampled to 512^3 and started with gravity, and allowed to run for $0.6t_{ff}$. Presented here are three snapshots (at 0.1, 0.3, and 0.6 t_{ff}) from each of the three runs. The filenames represent the plasma beta that characterizes the simulation, the resolution, and the snapshot. For example, `C12_Beta2_256_0030.h5` is from the $\beta = 2$ simulation, at 256^3, and is at $0.3t_{ff}$. The data cubes are in hdf5, and contain a suggested scaling from code units to cgs. More details on scaling, simulation details, and results can be found in Collins et al. (2012).

In the package `C12_Tools.tar` one will find a script for reading in the data, either with or without the `yt` analysis package. We strongly recommend using `yt` for analysis of unigrids, and it is vital for AMR snapshots. Also provided are projections of the density along each of the axes for each of the snapshots.

REFERENCES

Burkhart, B., Collins, D. C., & Lazarian, A. 2015, ArXiv e-prints

Collins, D. C., Kritsuk, A. G., Padoan, P., Li, H., Xu, H., Ustyugov, S. D., & Norman, M. L. 2012, ApJ, 750, 13