For use:
These simulations are provided free to use with proper reference.

Please reference the following papers for use:

<u>Turbulence driving and setup papers:</u>
Federrath et al. 2008
Federrath et al. 2010b
Federrath 2015

<u>FLASH code papers:</u>
Fryxell et al. 2000;
Dubey et al. 2008;

And the CATS release paper (Burkhart et al. 2020).

If you have questions, would like additional parameters, resolutions, or snapshots, please email: Dr. Blakesley Burkhart at b.burkhart@rutgers.edu

The simulations presented here are produced with the multi-physics, adaptive mesh refinement (AMR Berger & Colella 1989) code flash (Fryxell et al. 2000; Dubey et al. 2008 using version 4.5 to solve the compressible magnetohydrodynamical (MHD) equations on three-dimensional (3D) periodic grids of fixed side length L=2pc, including turbulence and magnetic fields.

These simulations include a turbulence driving module that produces turbulence driven on large scales (k=2; half the box size) and forced with a set spectrum of $E(k) \sim k^{-2}$, consistent with supersonic, compressible turbulence. This is different from the CHO-Godonov simulations presented in the CATS release as those simulations are not forced to have a particular power spectrum. We use a mixture of turbulence forcing and include a run that is fully solenoidal (b=.333), fully compressive (b=1) and mixed (b=.5). The different file names show different values of forcing parameter (b). We provide snapshots between 2-4 turn over times.

See the StirFromFile module in the flash user guide for more details:
http://flash.uchicago.edu/site/flashcode/user_support/flash_ug_devel.pdf

We include the flash.par parameter file that describes the parameter setup. In particular these simulations have Mach number ~7, Alfven Mach number ~2, and sound speed 0.2 km/s (T=10k). All our simulations share the same global properties: a cloud size L = 2 pc, a total cloud mass M = 388 Msun and a mean density $\rho 0 = 3.28 \times 10^{-21}$ g cm^{-3} , resulting in a global mean freefall time t_{ff} = 1.16 Myr, similar to the initial set up of Federrath 2015.