

In-class assignment # 10

Brian O'Shea,
PHY-905-005, Computational Astrophysics and Astrostatistics
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Instructions: In today's class we are going to do two things:

1. Verify that the 2^{nd} order finite-volume advection code you wrote in the pre-class assignment works correctly for the various conditions we've described – left- and right-traveling top hat and Gaussian boundary conditions, with both periodic and Dirichlet boundary conditions. Test each of the four sets of initial conditions with periodic boundary conditions for 1 full period, and do the same for one of the sets of boundary conditions for the Dirichlet BCs and verify that the wave disappears when it hits the boundaries.
2. Implement the `minmod` flux limiter (equations 5.11 and 5.12) in Zingale into your code. First spend some time discussing it with your group, and then implement it and test it for the velocities and initial conditions described above (but just use periodic boundary conditions), running for 1 period. Do you see the same results shown in Figures 5.4 and 5.10 of Zingale's notes?

As per usual, submit your code, plots, etc. via GitHub!