

Lax Friedrich and Roe

To plot the solution at final time with the Lax Friedrich/Roe flux do:

If we want to test for the first case of the project (i.e. the one with non zero source term)

- 1) Open PLOTproj3 and change m as the size of ENO stencils being using to obtain a $2m-1$ order accurate with the WENO algorithm
- 2) Be sure data=1 in this case
- 3) Open ShallowWaterWENOrhs and uncomment the Lax Friedrich flux or the Roe flux with non zero source (be sure the others are commented). Be also sure that the boundary condition are periodic (while the open are commented).

If we want to test for the other cases do:

- 1) Open PLOTproj4 change m as the size of ENO stencils being using to obtain a $2m-1$ order accurate with the WENO algorithm (for the reference solution and also for the numerical one). Moreover choose the data corresponding the initial conditions we want to use
- 2) Open ShallowWaterWENOrhs and uncomment the Lax Friedrich flux or the Roe flux with zero source (be sure the other are commented). For data=2,3 be also sure that the boundary condition are periodic (while the open are commented)
- 3) For the case data=4 open PLOTproj4 and change the final time for both reference and numerical solution. Change in ShallowWaterWENOrhs the boundary condition from Periodic to Open. Moreover uncomment the LF flux for zero source term. Then run just the reference solution. Then rechange the flux from LF to Roe flux with zero source term and run the last part of the PLOTproj4 file.

To plot the numerical error at final time with LF/Roe Flux do:

If we want to test for the first case of the project (i.e. the one with non zero source term)

- 1) Open error3 and change m as the size of ENO stencils being using to obtain a $2m-1$ order accurate with the WENO algorithm
- 2) Be sure data=1 in this case
- 3) Open ShallowWaterWENOrhs and uncomment the Lax Friedrich flux or the Roe flux with non zero source (be sure the others are commented). Be also sure that the boundary condition are periodic (while the open are commented).

We can also change the slope of the confront line.

If we want to test for the other cases do:

- 1) Open error4 and change m as the size of ENO stencils being using to obtain a $2m-1$ order accurate with the WENO algorithm (for both reference solution and numerical solution). set data as the case you want to treat (2 or 3).
- 2) Open ShallowWaterWENOrhs and uncomment the Lax Friedrich flux or the Roe flux with zero source (be sure the other are commented). Be also sure that the boundary condition are periodic (while the open are commented)