

Abstract Submitted
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Time-Dependent Grid for Fluid MHD Simulations in Athena++
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UNC-Chapel Hill — Many phenomena in astrophysics (collapse, blast waves, jets,
etc.) involve drastically changing spatial scales. This poses a challenge for models
and numerical simulations. I address this issue by implementing an expanding grid
formalism in the magnetohydrodynamics code Athena++. This gives every cell a
generic time dependence. It can be used to define a comoving grid, an expanding
grid, or a shrinking grid in any coordinate frame offered by the code. Instead
of requiring unique simulations for each spatial scale involved, the expanding grid
allows for a single simulation to contain the entire time evolution of the fluid.

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