Upwind DG Methods for Second Order Wave Equations
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DG methods with upwind fluxes are a standard choice for first-order Friedrichs systems. However, many physical theories, including the Einstein field equations, are most naturally formulated in second order form, with transformations to first order form leading to equations with many more variables and constraints. We will discuss some DG methods applied directly to second order hyperbolic systems incorporating simple upwind fluxes, including both energy-DG formulations on unstructured grids and Galerkin difference GD methods on structured grids.