

This talk will investigate the use of moving meshes to enhance the efficiency with which nonlinear systems of time-dependent hyperbolic conservation laws can be approximated. It will focus on how to design the algorithm to preserve properties of the underlying system of PDEs, e.g. physical and geometric conservation laws, balance laws between flux and source terms. The PDEs are approximated using a space-time residual distribution scheme which is positive (and hence stable and free of spurious numerical oscillations) for any choice of time-step. As a result, any local increase in mesh resolution caused by mesh adaptation does not restrict the global time-step, which can instead be chosen according to accuracy requirements alone. The link between these schemes and conservative ALE formulations will also be outlined. Numerical results will be shown in two space dimensions for both scalar advection and shallow water flows over variable bed topography.