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**Simulation of Compressible Reacting Flow using the Parallel Wavelet Adaptive Multiresolution Representation** ZACHARY ZIKOSKI, SAMUEL PAOLUCCI, JOSEPH M. POWERS, University of Notre Dame — The Wavelet Adaptive Multiresolution Representation (WAMR) provides spatial adaptivity which automatically supplies local grid resolution based on the demands of the solution. The WAMR method allows for a wide range of spatial scales to be captured while minimizing the number of degrees of freedom needed in the solution. Recently, the WAMR algorithm has been adapted for use on massively parallel computer architectures using an MPI-based domain decomposition approach. Results for parallel performance on test problems will be presented. Additionally, results from the application of the parallel WAMR algorithm to multidimensional compressible, reacting flows will be shown. Calculations include propagation of a detonation in a square channel and a combustible mixing layer using detailed chemistry models.

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