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**ON THE DEVELOPMENT OF A PARALLEL ADAPTIVE
MULTILEVEL GRID REFINEMENT SCHEME**

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Using Harten's generalized wavelets, we have developed an array version of our adaptive multilevel quadtree grid generation scheme that is suitable for multicore and parallel computing. The adaptive refinement scheme utilizes a series of one-dimensional independent linear multilevel projectors to locate regions of fast transitions. Once the region has been flagged for refinement, the wavelet-like coefficient is transformed into a quadtree array-coordinate, which signals the generation of a unit cell near the jump location. This process concentrates grid points near sharp transitions, and thus lowers the overall computational cost associated with solving PDE systems with codimension-one discontinuities.

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