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A New Method for the Level Set Equation Using a Hierarchical-Gradient Truncation and Remapping Technique[1] HARUHIKO KOHNO, MIT, JEAN-CHRISTOPHE NAVE, McGill University — We present a novel numerical method for solving the advection equation for a level set function. The new method uses Hierarchical-Gradient Truncation and Remapping (H-GTaR) of the original PDE. Our strategy reduces the original PDE to a set of decoupled linear ODEs with constant coefficients. Additionally, we introduce a remapping strategy used to periodically guarantee solution accuracy. The resulting scheme is unconditionally stable, and the solution accuracy is nearly independent of the time step. We will evaluate our method in 2D and present results to several classical benchmark problems.

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