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**An AMG solver for the Helmholtz equation.**

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We discuss an adaptive algebraic multigrid algorithm for solving indefinite Helmholtz equations. Our approach is reminiscent of the wave-ray algorithm developed by Brandt and Livshits in the geometric framework – it provides a special treatment to the null- and near-null components of the Helmholtz operator.

Unlike its predecessor, our solver does not have to rely on analytical solutions but rather computes their numerical approximations and fits them using Brandt's least squares approach for computing interpolation operators, allowing accurate and smooth coarse-grid representation. In this talk, we present preliminary one-dimensional results and discuss how this approach can be naturally extended to two dimensions.