**Combined Immersed-Boundary / High-Order Finite Difference Methods For Simulations of Acoustic Scattering**[1] WALTER ARIAS-RAMIREZ, UNICAMP-Univ de Campinas, BRITTON OLSON, Lawrence Livermore National Laboratory, WILLIAM WOLF, UNICAMP-Univ de Campinas, LAWRENCE LIVERMORE NATIONAL LABORATORY TEAM, UNIVERSITY OF CAMPINAS TEAM — The suitability of a continuing forcing immersed boundary method (IBM) combined with a high-order finite difference method is examined on several acoustic scattering problems. A suite of two-dimensional numerical simulations of canonical cases are conducted with the aim of analyzing the error behavior associated with the IBM, through wave reflection, wave diffraction, and the shock-boundary layer interaction phenomena. The compressible Navier-Stokes equations are solved using the Miranda code developed at Lawrence Livermore National Laboratory. Comparison of analytical solution against numerical results is shown for different flow parameters. Preliminary results indicate that the continuing forcing approach has the largest error in wave reflection compared to analytical solution.

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