

Abstract Submitted
for the DFD17 Meeting of
The American Physical Society

Grid-adaptation for chaotic multi-scale simulations as a verification-driven inverse problem JOHAN LARSSON, University of Maryland — The grid-spacing has a direct effect on both the numerical and the modeling errors in coarse-grained simulations of multi-scale problems (e.g., large eddy simulations of turbulence). We make the argument that it is impossible to estimate where errors are introduced in such simulations with absolute certainty, and thus that the problem of finding an “optimal” adapted grid must be framed as a verification-driven problem. After posing this new problem, one possible general approach to solving it is proposed. This is then tested and demonstrated on a modified Kuramoto-Sivashinsky equation.

Johan Larsson
University of Maryland

Date submitted: 26 Jul 2017

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