Abstract Submitted
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Adaptive entropy-constrained discontinuous Galerkin method for simulation of turbulent flows[1] YU LV, MATTHIAS IHME, Stanford University — A robust and adaptive computational framework will be presented for high-fidelity simulations of turbulent flows based on the discontinuous Galerkin (DG) scheme. For this, an entropy-residual based adaptation indicator is proposed to enable adaptation in polynomial and physical space. The performance and generality of this entropy-residual indicator is evaluated through direct comparisons with classical indicators. In addition, a dynamic load balancing procedure is developed to improve computational efficiency. The adaptive framework is tested by considering a series of turbulent test cases, which include homogeneous isotropic turbulence, channel flow and flow-over-a-cylinder. The accuracy, performance and scalability are assessed, and the benefit of this adaptive high-order method is discussed.

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Yu Lv
Stanford University

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