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Grid-independence and convergence of statistics in an LES of turbulent mixing[1] GEORGIOS MATHEOU, PAUL DIMOTAKIS, California Institute of Technology — Grid resolution, or the turbulence resolution length scale, is an important parameter in large-eddy simulation (LES). For a predictive LES model, turbulence statistics should become independent of grid-resolution, for sufficiently refined calculations. In the work presented, the dependence of the statistics on grid-resolution is studied for a case of mixing of a passive scalar in a high Reynolds number recirculating shear flow. The stretched-vortex LES–SGS model is used for both subgrid momentum and scalar transport. In order to investigate convergence, simulations where performed at three grid-resolutions differing by a factor of 2 in each direction between them. The effect of grid-resolution on the mean flow fields, probability density functions of the passive scalar and spectra is discussed and the resolution requirements are quantified. Turbulence statistics are also compared against experimental measurements.

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