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Three-point statistics of passive scalars at high Schmidt numbers[1]
M. P. CLAY, Georgia Institute of Technology, K. P. IYER, D. BUARIA, New York University, P. K. YEUNG, Georgia Institute of Technology, K. R. SREENIVASAN, New York University — The turbulent mixing of passive scalars is a fundamental problem relevant to many natural and engineering flows. While traditionally analyzed via one- or two-point statistics, three-point statistics have also been used to gain insight into the structure of the scalar field [Warhaft, *Annu. Rev. Fluid Mech* **32**, 203–240 (2000)]. Experimental data are scarce, and for the important case of scalar fluctuations generated under the presence of a mean gradient in isotropic turbulence, measurements are limited to Schmidt numbers (Sc) near unity [Mydlarski and Warhaft, *Phys. Fluids* **10**, 2885–2894 (1998)]. Here we analyze three-point statistics from direct numerical simulations of scalars under a uniform mean gradient in $R_\lambda \approx 140$ forced isotropic turbulence. By using grids with up to 8192^3 points and passive scalars with Sc up to 512, three-point statistics are gathered in the emerging viscous-convective range to study the approach to local isotropy exhibited by high-Sc scalars.

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Matthew Clay
Georgia Tech

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