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**Eitan Tadmor\*** ([tadmor@cscamm.umd.edu](mailto:tadmor@cscamm.umd.edu)), Department of Mathematics, University of Maryland, College Park, MD 20742, and **Terence Tao** ([tao@math.ucla.edu](mailto:tao@math.ucla.edu)), Department of Mathematics, UCLA, Los Angeles, CA 90095. *Multipliers, velocity averaging and applications to nonlinear PDEs.*

Velocity averaging is used to study the regularizing effects in quasilinear second-order equations,  $\mathcal{L}(\nabla_x, \rho)\rho = S(\rho)$  using their underlying kinetic formulations,  $\mathcal{L}(\nabla_x, v)\chi_\rho = g_S$ . Our study of velocity averaging applies to a large class of operators satisfying the so-called truncation multiplier property, which is shown to include all  $\mathcal{L}$ 's of degree  $\leq 2$ . In particular, we improve previous regularity statements for multidimensional conservation laws, and we derive completely new regularity results for related convection-diffusion and elliptic equations driven by degenerate, non-isotropic diffusion. (Received January 12, 2006)