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Measuring droplet coalescence rates in turbulent GREGORY BEWLEY, KELKEN CHANG, EBERHARD BODENSCHATZ, Max Planck Institute for Dynamics and Self-Organization — An outstanding problem in the understanding of droplet suspensions is the accurate prediction of the rate of coalescence of the droplets in a turbulent flow. A notable application is in cloud physics, where it is the coalescence of droplets that forms rain. We present results from measurements of droplet coalescence rates in a turbulent airflow as a function of Stokes and Reynolds number. We observe the dynamics of water droplets between 5 and 20 microns in diameter in isotropic and anisotropic turbulence with R_λ up to 350. The data complement a long history of numerical and theoretical work.

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