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Turbulence attenuation by high inertia particles having the same response time TAKUYA TSUJI, TOSHITSUGU TANAKA, Osaka University — Interactions between particles and turbulence are very complicated and physical mechanism of turbulence modulation by particles is still not known well. In this study, turbulence attenuation by high inertia particles that have the same response time is investigated in stationary isotropic homogeneous turbulence. An immersed-boundary DNS technique which resolves the flow around each particle properly was utilized. Particles were set to slightly larger than Kolmogorov micro scale. All cases show turbulence attenuation while the magnitude of turbulence decay varies on particle Reynolds number. When particle is relatively large, vortex tubes exist as evading particles. On the contrary, when particle becomes small, growth of vortex tubes are blocked. This leads higher attenuations.

Takuya Tsuji
Osaka University

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