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Particle segregation by Stokes number for small neutrally buoyant spheres in a fluid SHANE ROSS, PHANINDRA TALLAPRAGADA, Virginia Tech — The segregation of particles by Stokes number is investigated using sensitivity analysis of a simplified version of the Maxey-Riley equations appropriate for small neutrally buoyant spheres. By considering the sensitivity of the final location of a particle with respect to the initial velocity of the particle (relative to the fluid), we can partition the relative velocity space at each position. Considering particles in a periodic, cellular fluid flow, the partition gives the final cell location of a particle. The partition is a function of the separatrices in the underlying fluid flow and the Stokes number. We demonstrate how this partition framework can be used to segregate particles by Stokes number in a fluid.

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