

## Direct Numerical Simulation of Gas-Solid Flow around a Circular Cylinder\*

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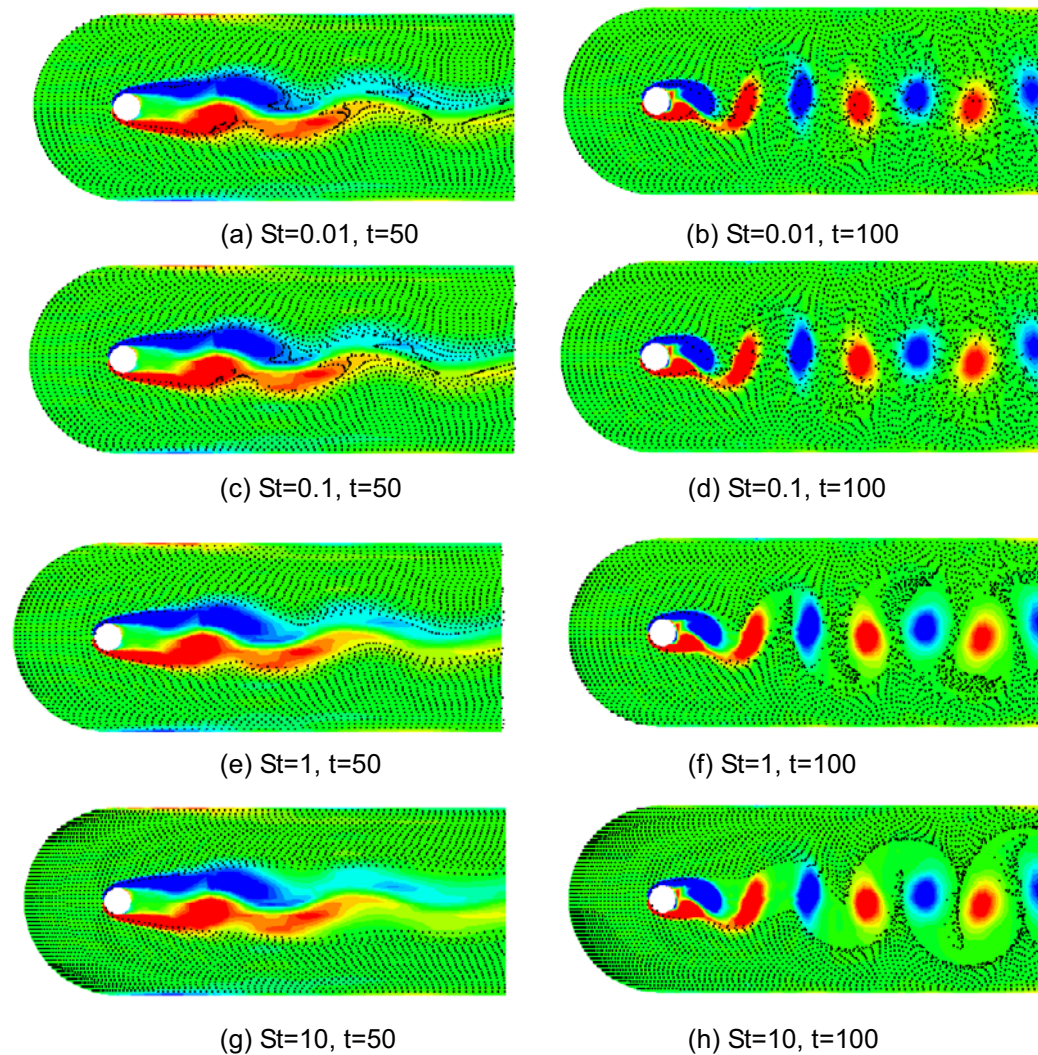


Fig. 1. Distribution of particles in the cylinder wake at  $Re=100$ .

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Figure. 1 shows the dispersion patterns of different Stokes number particles in a two-dimensional cylinder wake at  $Re=100$ . The gas structure is simulated by a spectral-element method with third-order accuracy and a Lagrangian approach is used to trace particle trajectory. The simulation results show that particle Stokes number is an important factor to characterize the particle dispersion in the cylinder wake. Smaller particles have more particle dispersion due to their well follow capability. They appear much similar dispersion trend as gas-phase vortex structure. With the Stokes numbers increasing, the particles are to be focused in the thin regions of vortex-scale boundaries and formed an organized structure.

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