

Abstract Submitted
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Flow Pattern past Two Spheres in Proximity¹ KYUNG-SOO YANG,
DONG-HYEOG YOON, Inha University — As a follow-up study of flow-induced forces on two nearby spheres [Phys. Fluids 19, 098103 (2007)], this paper establishes a systematic characterization of flow patterns past two identical spheres in proximity at $Re=300$. We consider all possible arrangements of two spheres in terms of the distance between the spheres and the angle inclined with respect to the main flow direction. It turns out that significant changes in shedding characteristics are noticed depending on how the two spheres are positioned. Ten distinct flow patterns are identified in total, and a detailed description is given to each pattern. Collecting all the numerical results obtained, we propose two comprehensive tables; one for flow pattern for each arrangement of the spheres and the other for Strouhal number of the corresponding vortex shedding. The perfect geometrical symmetry implied in the flow configuration allows one to use those tables for any two identical spheres arbitrarily positioned in physical space with respect to the main flow direction.

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