Flow-induced Forces on Two Nearby Spheres[1] KYUNG-SOO
YANG, DONG-HYEOG YOON, Inha University — Flow-induced forces on two
identical nearby spheres at Re=300 were numerically studied using an immersed
boundary method. We consider all possible arrangements of the 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 the characteristics
of vortex shedding are noticed depending on how the two spheres are positioned,
resulting in quantitative changes of force coefficients on both spheres. Collecting all
the numerical results obtained, we present the diagrams for the force coefficients on
the distance vs. angle plane for each of the two spheres. The perfect geometrical
symmetry implied in the flow configuration allows one to use those diagrams to esti-
mate flow-induced forces on two identical spheres arbitrarily positioned in physical
space with respect to the main flow direction.

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