

Abstract Submitted  
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**On the motion of a neutrally buoyant cylinder in simple shear flow** TSORNG-WHAY PAN, Department of Mathematics, University of Houston, Houston, TX 77204, SHIH-DI CHEN, SHIH-LIN HUANG, CHIN-CHOU CHU, CHIEN-CHENG CHANG, Institute of Applied Mechanics, National Taiwan University, Taipei 106, Taiwan, ROC — We have investigated the motion of a neutrally buoyant (NB) cylinder of circular or elliptic shape in simple shear flow by direct numerical simulation. The numerical results are validated by the comparisons with existing theoretical, experimental and numerical results. When placing a NB cylinder of either shape away from the centerline initially, it may migrate to an equilibrium position between the centerline and the wall, not the centerline, depending on the particle Reynolds number. Unlike the circular cylinder, the elliptic shape cylinder can migrate toward the without rotating at the higher particle Reynolds number due to the balanced torque from two sides.

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