

Abstract Submitted  
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**Hydrodynamics of a flexible plate between pitching rigid plates**

JUNYOUNG KIM, DAEGYOUM KIM, KAIST — The dynamics of a flexible plate have been studied as a model problem in swimming and flying of animals and fluid-structure interaction of plants and flags. Motivated by fish schooling and an array of sea grasses, we investigate the dynamics of a flexible plate closely placed between two pitching rigid plates. In most studies on passive deformation of the flexible plate, the plate is immersed in a uniform flow or a wavy flow. However, in this study, the flexible plate experiences periodic deformation by the oscillatory flow generated by the prescribed pitching motion of the rigid plates. In our model, the pitching axes of the rigid plates and the clamping position of the flexible plate are aligned on the same line. The flexible plate shows various responses depending on length and pitching frequency of rigid plates, thickness of a flexible plate, and free-stream velocity. To find the effect of each variable on the response of the flexible plate, amplitude of a trailing edge and modal contribution of a flapping motion are compared, and flow structure around the flexible plate is examined.

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