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Hydrodynamic interferences of two rigid foils in a flowing soap film[1] SONG PAN, XINLIANG TIAN, Shanghai Jiao Tong University — We investigated two separated rigid foils by altering their relative locations in soap film. The arrangements of the foils can be divided as tandem configuration, side-by-side configuration and staggered configuration. The flow patterns are classified and the drag forces are measured to investigate the hydrodynamical interference under these conditions. Based on shear layer behaviors and wake structures, the flow interference regimes are classified as three types: wake interference, proximity interference and distance interference. We then mapped out the variation of the drag forces with 1045 different locations. Compared to the drag of the single foil in the soap film, the drag on a foil reduces significantly when it is located at a trailing position under tandem configuration. However, it will suffer a heavier burden under side-by-side configuration. The drag is minimally affected in the staggered configuration. The relationship between flow interference and drag force variation is also discussed.

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