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Drag forces of rectangular cylinders with different aspect ratios in a vertical soap film[1] SONG PAN, XINLIANG TIAN, State Key Laboratory of Ocean Engineering, Shanghai Jiao Tong University — The soap film provides a convenient way to study the drag force coefficient of a rectangular cylinder in the quasi-2D flow while it has been already investigated with numerical (2D and 3D) and experimental (3D) methods. We measured tiny drag forces of different rigid-wire rectangular cylinders by varying their aspect ratios in a vertical flowing soap film. We placed the pre-impregnated rectangular cylinders on a hook inserted into the soap film. The aspect ratios are defined as ratios of the length of cross-stream directions to height in the streamwise. We find that the measured drag forces do not match with published 2D numerical results, indicating the soap film shows 3D features when the aspect ratio is small.

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Song Pan
State Key Laboratory of Ocean Engineering, Shanghai Jiao Tong University

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