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Numerical analysis of capillary flow by optimal control<sup>1</sup> MASAHIKO SUGIURA, KEIJI KAWACHI, The University of Tokyo — Inspired by a water strider, the development of micro machines walking on water is in progress. In order to establish design principles for the micro machines walking on water, it is important to know what cross-sectional shape of the supporting legs is efficient to locomote. In this paper, cross-sectional shape of a bar generating large propulsive force in a steady motion is discussed. It is possible to measure the drag acting on various kinds of cross-sectional shapes in experiment, but it is efficient if we can estimate drag by numerical method. This paper focuses on a new numerical method for estimating drag acting on a partially submerged object. The method eliminates computational cost by using optimal control and enables accurate modeling of two-dimensional fluid flows driven by surface tension.

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