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Capillary oscillations at the exit of a nozzle

We compute the natural frequencies for the oscillation of the free boundary of a perfect incompressible fluid in presence of capillary forces. First, we study the case when the fluid occupies the domain whose boundary consists of the free boundary of small radius and covers outside of the free boundary. We compare the results with the frequencies of oscillation in the absence of solid side walls. Secondly, we study the effect of having two parallel solid walls on the natural frequencies of oscillation of the free boundary.