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CONTENTS

Abstract: A study is made of the initial value problem of the capillary-gravity waves against a vertical cliff. The waves are generated by a harmonically oscillating surface pressure distribution in an inviscid incompressible homogeneous liquid. The wave problem is solved by the Laplace and Fourier cosine transforms combined with asymptotic methods. The ultimate steady-state solution for the capillary-gravity wave motions is explicity determined with physical significance. A comparison is made between the wave solutions in a liquid unbounded in both horizontal directions and in a liquid against a vertical cliff. In the former case, the ultimate steady-state solution consists of two progressive capillary-gravity waves, and in the latter case, the steady-state consists of only one wave propagating in the positive x-direction. It is shown that the cliff-bound wave carries certain energy with it, and is totally reflected back because there is no mechanism to absorb the incoming energy in the inviscid fluid system with a rigid cliff. The reflection of waves is physically admissible phenomenon in such non-dissipating system.

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