

Analyticity of Rotational Travelling Water Waves

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Of concern is the regularity of solutions to the classical water wave problem for two-dimensional Euler flows with vorticity. It is shown that the profile together with all streamlines beneath a periodic water wave travelling over a flat bed are real-analytic curves, provided that the vorticity function is merely integrable and that there are no stagnation points in the flow. It is furthermore exposed that the analyticity of streamlines can be used to characterise intrinsically symmetric water waves.