

Waves with prescribed distribution of vorticity

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Abstract. This concerns a variational theory of steady periodic surface waves in which the distribution function of vorticity (its rearrangement class) in the underlying flow is prescribed. Waves arise from minimizing the total energy and the functional dependence of vorticity on the stream function emerges as the Lagrange multiplier that comes from prescribing the vorticity distribution. The theory does not distinguish between irrotational waves and waves with locally square-integrable vorticity.