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On the existence of steady periodic capillary-gravity stratified water waves

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Abstract. We prove the existence of small steady periodic capillary-gravity water waves for stratified flows, where we allow for stagnation points in the flow. We establish the existence of both laminar and non-laminar flow solutions for the governing equations. This is achieved using bifurcation theory and estimates based on the ellipticity of the system, where we regard, in turn, the mass-flux and surface tension as bifurcation parameters.

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