The flow beneath a surface water wave

Zusammenfassung

The purpose of the project is to elucidate the flow pattern beneath a surface water wave train. Some of the most fundamental questions arising are:
1) What is the effect of an underlying current on the shape of the surface waves?
2) Can one describe the motion of individual particles? What is the role of a current?
3) Where in the fluid is the pressure minimal/maximal?
4) Investigation of tsunamis.
The project is multi-disciplinary since theoretical advances have to be confirmed and are often motivated by experiments. We expect that recent advances in nonlinear analysis will enable far-reaching mathematical studies performed by the research group funded through the project and working in Vienna. The experimental part will take place at the Franzius Institute in Hannover, where the largest wave-tank in the world is located.

Keywords:
water waves, Euler equations, vorticity, particle paths, pressure, wave interaction

Principal Investigator:	Adrian Constantin
Institution:	University of Vienna
Weitere ProjektpartnerInnen:	Torsten Schlurmann (Gottfried Wilhelm Leibniz Universität Hannover)

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Fördersumme: EUR 452.900

Weiterführende Links zu den beteiligten Personen und zum Projekt finden Sie unter
https://archiv.wwtf.at/programmes/mathematics/MA09-003