

# Colloquium Talk

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## Capturing the flow structure beneath water waves

Wednesday, February 14, 2018

at 15:00 h

ESI, Boltzmann Lecture Hall

**Abstract:** I will address the problem of capturing the flow structure beneath rotational water waves. The investigation is performed through numerical modeling and simulations, using ingredients of 2D potential theory. We consider rotational traveling waves and their different regimes regarding the appearance of stagnation points and the possibility of pressure anomalies. We illustrate bifurcation properties of these critical points as, for example, when vorticity varies. If time permits I will also briefly describe a very recent work, extending the conformal mapping technique to 3D, where the Laplacian is no longer invariant. We generalize the terrain-following Boussinesq system presented in Nachbin (SIAP 2003) for weakly dispersive, weakly nonlinear 2D waves in the presence of highly variable ridgelike topographies.

A. Constantin

February 2, 2018