

Bathymetry Reconstruction in a Water Channel

Judith Angel, Technische Universität Hamburg

For the prediction and study of water flows in a river or channel the knowledge of the bottom topography - the bathymetry - is required. Direct measurements of bathymetries are possible, but can be very expensive and time consuming. This motivates the development of methods to reconstruct a bathymetry numerically. In this talk, an approach will be shown that uses measurements of the water surface for the reconstruction. By defining an optimisation problem that is constrained by the one-dimensional shallow water equations it is possible to obtain an approximation on the real bathymetry. Numerical results on a real-world problem will be presented, using measurements obtained in a wave channel at TUHH's Institute of Mechanics and Ocean Engineering.