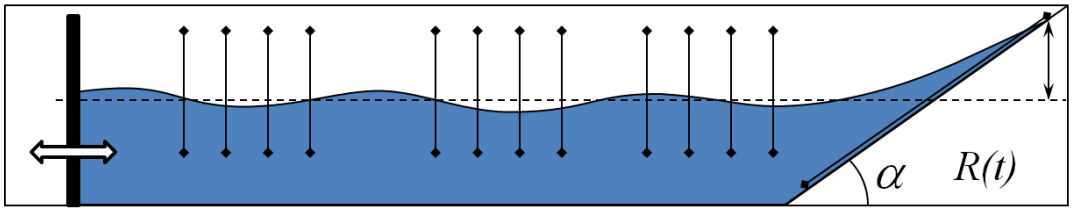
# Numerical simulation of the wave runup on an inclined shore using 2-layer shallow water equations

Simulation of the wave runup is important area of coastal science relevant to prediction of coastal flooding, shore erosion, and pollutant transport. The project is aimed to provide the numerical counterpart to experimental series performed at the 300 metres long wave flume GWK (http://www.fzk.uni-hannover.de/406.html?L=1 ).




The wave breaking is observed during wave retraction from the slope (see photo below) but not appears in a single-layer shallow water numerical simulation. The project aim is to introduce the bottom friction by considering a near-bottom fluid as a separate layer.

Simulation will be compared with experimental data from October-2012 series as well as planned August-2013 series in which the student may participate. The project has a potential of becoming a PhD programme as the runup studies is an on-going activity with many effects to study such as sediment and admixture transport.

Current experimental series are supported by the Hydralab ( http://www.hydralab.eu/ ) EU programme "Long wave dynamics and statistics of the shoreline motion: influence of the asymmetry and nonlinearity of incoming waves" ( http://www.fzk.uni-hannover.de/661.html?&L=1 )

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