Mathematisch-Naturwissenschaftliche Fakultät
Mathematisches Institut

HEINRICH HEINE
UNIVERSITÄT DÜSSELDORF

SEMINAR - ANKÜNDIGUNG

Oberseminar Analysis

Es spricht

am Montag, den 23. Juni 2014, um 14:30 Uhr

im Hörsaal 5 G (Gebäude 25.22)

Herr Prof. Dr. Ziyad Muslimani

über das Thema

„On a new nonlocal formulation of the water wave equation“

Abstract:

The classical equations of water waves are reformulated as a system of two equations, one of which is an explicit non-local equation, for the wave height and for the velocity potential evaluated on the free surface. Evaluation of the velocity potential as a function of the depth is not required in order to calculate the wave height and the velocity potential on the free surface. The non-local system yields integral relations related to mass and centre of mass, and is shown to reduce to known asymptotic limits in shallow and deep water. Included in these asymptotic reductions are the Boussinesq, Benney–Luke and nonlinear Schrodinger equations. Two-dimensional lumps with sufficient surface tension are obtained numerically. The extension of this non-local formulation to the case of a variable bottom is also presented.