数学与系统科学研究院

计算数学所学术报告

报告人： **Prof. Yue Liu**

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报告题目：

Asymptotic analysis on the modelling of the shallow-water waves with the Coriolis effect

邀请人： 常向科 博士

报告时间：2016 年 8 月 1 日（周一）

上午 10:00~11:00

报告地点： 数学院南楼七层

702 会议室

Abstract：

In this talk, a mathematical model of long-crested water waves propagating mainly in one direction with the effect of Earth's rotation is derived by following the formal asymptotic procedures. Such a model equation is analogous to the Camassa-Holm approximation of the two-dimensional incompressible and irrotational Euler equations and has a formal bi-Hamiltonian structure. Its solutions corresponding to physically relevant initial perturbations is more accurate on a much longer time scale. It is shown that the deviation of the free surface can be determined by the horizontal velocity at a certain depth in the second-order approximation. The effects of the Coriolis force caused by the Earth rotation and nonlocal higher nonlinearities on blow-up criteria and wave-breaking phenomena are also investigated. Our refined analysis is approached by applying the method of characteristics and conserved quantities to the Riccati-type differential inequality.

欢迎大家参加！