Geophysical Research Abstracts
Vol. 14, EGU2012-1302, 2012
EGU General Assembly 2012

The reduced Ostrovsky equation: integrability and breaking

R. Grimshaw

Loughborough University, Department of Mathematical Sciences, Loughborough, United Kingdom
(r.h.j.grimshaw@lboro.ac.uk, +44-(0)1509-223969)

The reduced Ostrovsky equation is a modification of the Korteweg-de Vries equation, in which the usual linear dispersive term with a third-order derivative is replaced by a linear non-local integral term, which represents the effect of background rotation. This equation is integrable provided a certain curvature constraint is satisfied. We demonstrate, through theoretical analysis and numerical simulations, that when this curvature constraint is not satisfied at the initial time, then wave breaking inevitably occurs.