

Lothar-Collatz-Seminar

Wed, 09. Dec · 4:15 pm · online

Dr. Sergiy Vasylykevych (Uni Hamburg)

TIGAR, a high accuracy forecast model based on normal mode decomposition

Abstract:

TIGAR, which stands for Transient Inertio-Gravity And Rossby wave dynamics is a new forecast model that I am developing in collaboration with Nedjeljka Žagar. In the talk I will introduce the model and present the results of 2D simulations in the rotating shallow water setting.

High precision computations are achieved through the use of higher order integrating factor and exponential time-differencing methods in the normal-mode framework, leading to a major increase in computational efficiency and stability. Comparison with classical time-stepping schemes shows improvement of several orders of magnitude in resolution of gravity waves and wave-wave interactions at no additional computational cost. The gains are sufficient to enable practical model capable of resolving complex multi-scale flows without the need for explicit damping of small scales.

For further information please contact

Dr. Claus Goetz (claus.goetz@uni-hamburg.de), or visit
www.c3s.uni-hamburg.de/news-events/seminar-c3s.html