

# PHYSIKALISCHES KOLLOQUIUM

Mittwoch, den 01.12.2010, um **15:30 Uhr**  
Ort: Reichenhainer Str. 90; Neues Hörsaalgebäude, Raum: 2/N013



## Prof. Dr. Ulrike Feudel

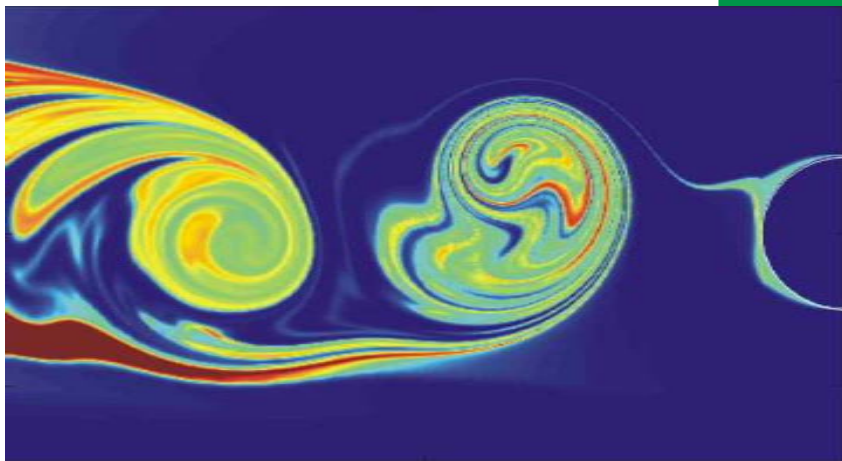
Theoretical Physics/Complex Systems

Institute for Chemistry and Biology  
of the Marine Environment

Carl von Ossietzky University  
Oldenburg, Germany

## The interplay of hydrodynamics and biology: plankton blooms in vortices

Plankton patterns as observed in satellite images of the ocean are a result of the interplay of population dynamics with physical transport processes. We study the biological activity in the wake of an island which is close to an upwelling region for nutrients which are essential for plankton growth. Our results are based on the numerical analysis of a simple kinematic hydrodynamic flow in the wake coupled to a plankton model. We show that mesoscale hydrodynamic structures can either act as a barrier blocking the transport of nutrients or facilitating this transport leading to an enhanced plankton growth. Using finite size Lyapunov exponents to visualize stable and unstable manifolds embedded in the flow we study the transport of nutrients. In particular we show that mesoscale coherent structures act as incubators for plankton growth leading to localized plankton blooms within vortices in the wake of an island.



Alle Zuhörer sind ab 15:15 Uhr zum Kaffee vor dem Hörsaal eingeladen.