

International Workshop on

Exploring Complex Dynamics in High-Dimensional Chaotic Systems: From Weather Forecasting to Oceanic Flows

25 - 29 January 2010

Scientific coordination

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The Lyapunov analysis is a well established tool to explore chaotic dynamics. Currently, different types of so-called, in a generic fashion, “Lyapunov vectors” are computed in the most diverse applications ranging from engineering through applied mathematics and physics to atmospheric sciences. Depending on the context, researchers use backward Lyapunov vectors, singular Lyapunov vectors, bred vectors, finite-time Lyapunov vectors, and so on. All these quantities often have different physical interpretation and only provide access to pieces of partial information about the complexity puzzle. The workshop will promote an active and lively discussion of recent developments concerning the different types of Lyapunov-like vectors, their characterization and potential use in forecasting of spatially extended chaotic systems. The workshop covers both theoretical aspects and practical implementations in realistic applications.

Topics include:

Characterization of space-time or high-dimensional chaotic states • Predictability of chaotic space-time dynamics • Weather forecasting: ensembles of perturbations and assimilation • Oceanic flows, advection and mixing • Identification of global modes in collective dynamics • Hydrodynamic modes in molecular dynamics simulations • Characterization of hyperbolic/nonhyperbolic chaotic sets • Control of chaotic dynamics

Invited speakers (* to be confirmed)

V. Afraimovich (Mexico)

L. Bunimovich (USA)

H. Chaté (France)

H. A. Dijkstra (Netherlands)

R. M. Errico (USA)

G. Gallavotti (Italy)

F. Ginelli (France)

J. M. Gutiérrez (Spain)

G. Haller (USA)

E. Hernández-García (Spain)

V. Homar (Spain)

B. R. Hunt (USA)

E. Kalnay (USA)

S. Kuznetsov (Russia)

B. Legras (France)

F. Lekien (Belgium)

M. Leutbecher (UK)

G. P. Morriss (Australia)

T. N. Palmer* (UK)

D. Pazó (Spain)

Y. B. Pesin* (USA)

G. Radons (Germany)

S. Reich* (Germany)

R. Samelson (USA)

L. A. Smith (UK)

I. Szunyogh (USA)

O. Talagrand (France)

Z. Toth* (USA)

Applications are welcome and should be made by using the application form on the workshop web page (please see URL below). The number of attendees is limited. The **registration fee** for the workshop is **100 €** and should be paid by all participants. Costs for accommodation and meals will be covered by the Max Planck Institute. Limited funding is available to partially cover travel expenses. Please note that childcare is available upon request.

Deadline for applications is October 15, 2009.



For further information please contact:
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