From Chaos to Complexity   6-8 July 2011

All talks in B3.03, Mathematics Institute, Zeeman Building

Wednesday 6 July

All morning: Registration in B1.37

12.30   Lunch, The Street - Mathematics

13.45-13.55 **Claude Baesens** (Maths, Warwick), *Welcome & Introduction*

14.00-14.25 **Sheldon Newhouse** (Maths, Michigan)
        On the existence of chaos in the Lorenz systems

14.30-14.55 **Michal Misiurewicz** (Maths, IUPUI, Indianapolis)
        Entropy of hypercubes

15.00-15.25 **Daniel Goroff** (Alfred P. Sloan Foundation, New York)
        The origins of chaos theory

15.30   Tea in Mathematics Common Room

16.00-16.25 **Joël Sommeria** (LEGI, CNRS, Grenoble)
        Emergence of coherent flows in fluid turbulence

16.30-16.55 **Fabrice Doveil** (LPIIM, CNRS, Marseille), *Observation of Hamiltonian*
        dynamics and chaos control in wave-particle interaction

17.00-17.25 **Rui Dilão** (Nonlinear Dynamics, IST, Lisbon), *Mathematical complexity*
        theory in systems biology: several success stories and new problems

17.30-17.45 **Yi-Chiuan Chen** (Maths, Academia Sinica, Taiwan)
        Family of Julia sets as orbits of differential equations

17.50   Break

18.00   Drinks and Dinner, Mathematics Common Room

Thursday 7 July

08.50-09.05 **Gabriela Gomes** (FCG-IGC, Lisbon)
        Heterogeneity in antibody range and the evolution of influenza viruses

09.10-09.25 **Vasileios Basios** (Nonlinear Phenomena, ULB, Brussels)
        Non-standard aggregation patterns emerging in complex systems

09.30-09.55 **Antonio Politi** (Sistemi Complessi, CNdR, Firenze)
        Collective phenomena in neural networks

10.00-10.25 **Ram Ramaswamy** (Hyderabad), *Synchrony in stochastic dynamical*
        systems: applications to cellular phenomena

10.30   Coffee in Mathematics Common Room

11.00-11.25 **Paul Rapp** (USUHS)
        Dynamical analysis and complexity measures in neuropsychiatry

11.30-11.55 **Jean-Pierre Eckmann** (Maths & Physics, Geneva)
        Rattling and Freezing in a Model of 1d Heat Conduction

12.00-12.25 **Giancarlo Benettin** (Maths, Padova)
        The Fermi-Pasta-Ulam-Problem: main ideas, recent results, open questions

12.30   Lunch in Mathematics Common Room

13.45   Group photo

14.00-14.25 **Robert May** (Zoology, Oxford)
        Stability and complexity in model banking systems

14.30-14.55 **Raphaël Douady** (Economie, CNRS, Paris 1 & Riskdata)
        Financial crisis dynamics: Attempt to define a market instability indicator

15.00-15.25 **Bernard Legras** (Météorologie Dynamique, ENS, Paris)
        Complexity and Climate

15.30	Tea in Mathematics Common Room
16.00-16.25	**Dimitry Turaev** (Maths, Imperial)
	On space-time chaos in driven Ginzburg-Landau equation
16.30-16.55	**Lai-Sang Young** (Courant, New York)
	Dynamics of neuronal networks modeling visual cortex
17.00-17.25	**Maurice Courbage** (Matière et Systèmes Complexes, Paris 7)
	On synchronisation of coupled neural spiking-bursting maps
17.30-17.45	**Bastien Fernandez** (CPT, CNRS, Marseille)
	Coupled Map Lattices beyond Uncoupled Regimes
17.50	Break
18.20	Transport to Saxon Mill
19.00	Dinner at Saxon Mill for invited speakers (*), including
	Gérard Iooss (Maths, Nice), *Les Houches 1981*
22.10	Transport to Radcliffe House

Friday 8 July

09.00-09.15	**Thomas Gilbert** (ULB, Brussels), *Order statistics and the Lyapunov spectra of some classes of high-dimensional billiard systems*
09.20-09.35	**Brian Ryals** (Courant, New York)
	Dynamics of N particles in a line segment
09.40-09.55	**Ben Mestel** (Open, Reading & INI, Cambridge)
	Renormalization in quasiperiodic dynamics
10.00-10.25	**Paul Glendinning** (Maths, Manchester)
	Emergence of polysynchrony in adaptive networks
10.30	Coffee in Mathematics Common Room
11.00-11.25	**Gene Wayne** (Maths, Boston),
	A dynamical systems approach to metastability
11.30-11.55	**Jean-Marc Gambaudo** (Maths, Nice)
	Quasicrystal ground states
12.00-12.25	**Yves Pomeau** (Physique Statistique, ENS, Paris)
	Statistical mechanics with gravitational interaction
12.30	Lunch in Mathematics Common Room
14.00-14.25	**Michael Berry** (Physics, Bristol)
	Fast and Slow
14.30-14.55	**Massimo Campanino** (Maths, Bologna), *Asymptotic behaviour of connection and correlation functions outside the critical point*
15.00-15.25	**Ana Noronha** (Ciência Viva & Nonlinear Dynamics, IST, Lisbon)
	Nonlinear dynamics for the public
15.30	Tea in Mathematics Common Room
16.00-16.25	**Johannes van Zeijts** (Credit Suisse, New York), *From KAM theory to particle accelerators, to the complexity of option trading*
16.30-16.55	**Jürg Heldstab** (INFRAS, Zürich)
	From chaos to environment
17.00-17.25	**Robert MacKay** (Maths & Complexity, Warwick)
	Hyperbolicity in mechanics, cosmology and emergence
17.30	Closing remarks and Skype session
17.50	Break
18.15	Les Houches 1981 reunion in D1.07
19.30	Dinner and Celebration at Radcliffe House for invited speakers (*)

(*) There will be a charge for accompanying persons.