

**Workshop**  
***Fluctuations, Chaos and Complexity in Multistable Systems***

1 - 7 August 2002  
Venue: Lancaster University, UK

**Programme**

*Thursday, 1 August*

Session "Fluctuations in non-equilibrium systems - I". Chair: Slava Soskin

- 14:00-14:10 Peter McClintock** (Lancaster) Welcome  
**14:10-15:00 Peter McClintock** (Lancaster) "Fluctuations in non-equilibrium systems"  
**15:00-15:50 Moshe Gitterman** (BIU, Israel) "Stabilization of metastable states"  
**15:50-16:10 Coffee break**  
**16:10-17:00 Slava Soskin** (Kiev) "Noise-induced escapes/transitions on short-time scales"  
**17:00-17:50 Manuel Arrayas** (Madrid) "Quantum dissipative systems"  
**17:50-19:00 Informal discussions**

*Friday, 2 August*

Session "Fluctuations in non-equilibrium systems - II". Chair: Moshe Gitterman

- 9:00-9:50 Igor Khovanov** (Saratov) "Control of large fluctuations in non-equilibrium systems"  
**9:50-10:40 Slava Soskin** (Kiev) "Drastic facilitation of the onset of global chaos in a Hamiltonian system due to an extremum in the dependence of eigenfrequency on energy"  
**10:40-11:00 Coffee break**  
**11:00-11:50 Alan McKane** (Manchester) "Unstable decay and state selection"

**Lunch time**

Session "Fluctuations in chaotic systems". Chair: Tatiana Vadivasova

- 14:00-14:50 Slava Soskin** (Kiev) "Reduction of the activation barrier by a non-adiabatic periodic force"  
**14:50-15:40 Tatiana Vadivasova** (Saratov) "The relaxation to stationary probability distribution and mixing properties of the chaotic attractors with noise"  
**15:40-16:00 Coffee break**  
**16:00-16:45 Suso Kraut** (Oldenburg) "Multistability in weakly dissipative systems and the influence of noise"  
**16:45-17:30 Alexander Silchenko** (Lancaster) "Noise-induced escape through a fractal basin boundary: saddle cycles and hierarchies of instability in chaotic systems"  
**17:40-19:00 Discussions with coffee. Moshe Gitterman** (BIU, Israel) "Self-organized criticality"

*Saturday, 3 August*

Session "Modelling stochastic dynamics of lasers". Chair: Elena Grigorieva

**9:00-9:50 Elena Grigorieva** (Minsk) "On the application of asymptotic methods to dynamics of lasers with nonlinear elements"

**9:50-10:40 Suso Kraut** (Oldenburg) "On the role of chaotic saddles in noisy multistable systems"

**10:40-11:00 Coffee break**

**11:00-11:30 Stefano Beri** (Lancaster) "Fluctuational transitions in VCSELs"

**11:30-12:20 Igor Khovanov** (Saratov) "Escape from quasi-hyperbolic chaotic attractor"

**Free afternoon**

*Sunday, 4 August*

Session "Synchronization - I". Chair: Olga Sosnovtseva

**9:00-9:50 Tatiana Vadivasova** (Saratov) "Synchronization of periodic, chaotic and stochastic systems"

**9:50-10:40 Alexander Balanov** (Lancaster) "Coherence resonance versus phase synchronization"

**10:40-11:00 Coffee break**

**11:00-11:50 Grigori Osipov** (Nizhny Novgorod) "Synchronization in oscillatory networks"

**Lunch time**

Session "Synchronization - II". Chair: Grigori Osipov

**14:00-14:50 Olga Sosnovtseva** (Lingby) "Phase multistability of fast-and-slow motions"

**14:50-15:40 Alexander Silchenko** (Lancaster) "Synchronization of non-identical chaotic systems"

**15:40-16:00 Coffee break**

**16:00 Poster Session**

**1. Alexander Nikitin** (Warwick) "Escape and trapping trajectories in bistable systems subject to strong harmonic forcing"

**2. David Allingham** (Warwick) "Modelling electrically stimulated auditory neurons using a stochastic leaky-integrate-and-fire model"

**3. Alexandra Pershakova** (Lancaster) "Modelling cardiovascular dynamics"

**4. Andriy Bandrivskiy** (Lancaster) "Exponentially fast Monte Carlo simulations"

**5. Stefano Beri** (Lancaster) "Escape from a saddle cycle"

*Monday, 5 August*

Session "Modelling stochastic dynamics of biological systems - I". Chair: Nigel Stocks

**9:00-9:50 Grigori Osipov** (Nizhny Novgorod) "Suppression of chaos in the cardiac model"

**9:50-10:40 Akito Igarashi** (Kyoto) "Elastically coupled Brownian motors in a 2-dimensional potential"

**10:40-11:00 Coffee break**

**11:00-11:50 Aneta Stefanoska** (Ljubljana) "Modelling oscillations in cardiovascular dynamics"

### **Lunch time**

Session "Modelling stochastic dynamics of biological systems - II". Chair: Aneta Stefanovska

**14:00-14:50 Olga Sosnovtseva** (Lingby) "Two-mode oscillations in nephron functioning"

**14:50-15:40 Nigel Stocks** (Warwick) "The applications of suprathreshold stochastic resonance to cochlear implant coding"

**15:40-16:00 Coffee break**

**16:00-16:50 Dmitry Luchinsky** (Lancaster) "Molecular motors"

**16:50-17:40 Andrey Polovinkin** (Nizhny Novgorod) "Stochastic dynamics of singled-out and coupled excitable elements"

### **19:00 Informal Conference Dinner**

*Tuesday, 6 August*

Session "Time-series analysis of biological data". Chair: Riccardo Mannella

**9:00-9:50 Nata Janson** (Lancaster) "Detection and modelling of interacting systems using one-dimensional signals"

**9:50-10:30 Andriy Bandrivskiy** (Lancaster) "Bayesian inference of cardiovascular time-series"

**10:30-11:00 Coffee break**

**11:00-11:50 Milan Palus** (Prague) "Detecting directionality of coupling: an information-theoretic approach"

**11:50-12:40 Aneta Stefanovska** (Ljubljana) "Synchronization and modulation in the cardiovascular system"

### **Free afternoon**

*Wednesday, 7 August*

Session "Numerical methods in stochastic modeling". Chair: Peter McClintock

**9:00-9:50 Igor Kaufman** (Moscow) "Data acquisition for cardio-vascular experiments and analogue simulations"

**9:50-10:40 Andriy Bandrivskiy** (Lancaster) "Exponentially fast Monte Carlo simulations"

**10:40-11:00 Coffee break**

**11:00-11:30 Stefano Beri** (Lancaster) "Finite noise intensity effects in non-equilibrium systems"

**11:30-12:20 Riccardo Mannella** (Pisa) "Monte Carlo simulations of stochastic differential equations"