Classical Chaos
and its Quantum Manifestations

Sputnik Conference of STATPHYS 20
In honor of Boris Chirikov

Toulouse, France • July 16 – 18, 1998

Program

16 July, Thursday

8.30 - 9.30 Registration

9.30 - 9.40 J.BELLISSARD Welcome address

9.40 - 9.50 D.SHEPELYANSKY   X

9.50 - 10.30 B.V.CHIRIKOV (Novosibirsk)

Interaction of nonlinear resonances:

A theory and experiment

10.30 - 11.00 Coffee break

11.00 - 11.30 Ya. SINAI (Princeton)

Transport in quasi - periodic media

11.30 - 12.00 L.BUNIMOVICH (Atlanta)

How high-dimensional stadia look like

12.00 - 12.30 A.LICHTENBERG (Berkeley)

Threshold to global diffusion in a nonmonotonic map

with quadratic nonlinearity

12.30 - 14.00 Lunch

14.00 - 14.30 S.AUBRY (Saclay)

Discrete breathers in nonlinear lattices :

a review of recent developments and applications

14.30 - 15.00 R.MACKAY (Cambridge)

An effective Hamiltonian for the dynamics

of relative phases of multi-breathers

15.00 - 15.30 A.PIKOVSKY (Potsdam)

Lyapunov vectors of space-time chaos

15.30 - 16.00 Poster highlights I

16.00 - 16.30 Poster Coffee break

16.30 - 17.00 J.LASKAR (Paris)

Frequency map analysis

17.00 - 17.30 G.ZASLAVSKY (New York)

Fading spectre of chaos

17.30 - 18.00 F.VIVALDI (London)

Hamiltonian round-off errors

18.00 - 18.30 S.RUFFO (Florence)

Chaos and statistical mechanics

in hamiltonian systems with long-range interaction

17 July, Friday

9.30 - 10.00 M.RAIZEN (Austin, TX)

Experimental study of dynamical localization

with ultra-cold cesium atoms

10.00 - 10.30 F.IZRAILEV (Novosibirsk/Mexico)

Classical approach to quantum 1D tight binding models

10.30 - 11.00 Coffee break

11.00 - 11.30 P.KOCH (Stony - Brook, NY)

Beyond (1d+ time) dynamics in periodically driven hydrogen atoms

11.30 - 12.00 A.BUCHLEITNER (Garching)

Stable classical configurations in strongly driven helium

12.00 - 12.30 V.AKULIN (Paris)

Level-band problem and many body effects in cold Rydberg atoms

12.30 - 14.00 Lunch

14.00 - 14.30 S.FISHMAN (Haifa)

Localized and extended dynamics for

chaotic systems -   models and realizations

14.30 - 15.30 Poster highlights II

15.30 - 16.00 Posters

16.00 - 16.30 Poster Coffee break

16.30 - 17.00 O.BOHIGAS (Orsay)

Distribution of the total energy of a system of non-interacting

fermions: random-matrix and semiclassical estimates

17.00 - 17.30 V.FLAMBAUM (Sydney)

Statistical theory of finite Fermi systems and chaos:

theory vs experiments in atoms

17.30 - 18.00 Y.FYODOROV (St. Petersburg / Essen)

Resonances in quantum chaotic scattering

and non-Hermitian random matrices

19.30 Banquet

18 July, Saturday

9.30 - 10.00 A.D.STONE (Yale)

Theory of wave-chaotic optical resonators

10.00 - 10.30 Poster highlights III

10.30 - 11.00 Poster Coffee break

11.00 - 11.30 Th.GEISEL (Göttingen)

What determines the anomalous spreading of wave packets ?

11.30 - 12.00 I.GUARNERI (Como)

On the dynamical meaning of spectral dimensions

12.00 - 12.30 Th.SELIGMAN (Cuernavaca)

On the special role of symmetric periodic orbits

in chaotic systems

12.30 - 14.00 Lunch

14.00 - 14.30 E.BOGOMOLNY (Orsay)

Intermediate statistics

14.30 - 15.00 F.HAAKE (Essen)

Periodic-orbit theory for dissipative quantum dynamics

15.00 - 15.30 Poster highlights IV

15.30 - 16.00 Posters

16.00 - 16.30 Poster Coffee break

16.30 - 17.00 E.SHURYAK (Stony - Brook, NY)

Quantum chaos in QCD vacuum

17.00 - 17.30 G.CASATI (Como)

Quantum Poincaré recurrences

17.30 End of the Conference (18 July, 1998)

Poster program

Poster highlights represent short oral presentations. Each participant has for that 3 minutes and can present 2 transparencies which represent the problem and the result. Oral presentations are followed by poster session. During this session each participant will have about 1 x 2 (length x height) square meters to present his poster. Posters should be placed at the morning and removed in the evening. During the poster session the author should be near his poster.

15.30 - 16.00 Poster highlights I (16 July)

1) ARTUSO Roberto (Como)
Correlation decay and return time statistics

2) BOATTO Stefanella (Paris)
Frequency analysis and KAM curve destruction : chaotic versus quasi-periodic vortex motion

3) BENITO Rosa M., ESTEBARANZ J.Manuel and LOSADA J.Carlos (Madrid)
Local frequency analysis as a way to explore the phase space of molecular hamiltonian systems

4) BAAKE Michael (Tubingen)
Gap statistics of kth-power-free integers

5) FLEISSER Martin (Essen)
Classical quasiparticle dynamics and chaos in trapped Bose condensates

6) YEVTUSHENKO Oleg (Regensburg)
Dynamical chaos in magnetic superlattices

7) FLEISCHMANN Ragnar (Göttingen)
Nonlinear dynamics of composite fermions

8) KOCH Christiane (Berlin)
Signatures of chaos in an asymmetric spin-boson-model

9) BALLENTINE Leslie (Burnaby)
Evolution of the moments of quantum and classical probability distributions

10) WEIGERT Stefan (Neuchatel)
Magnetically driven systems in one dimension

14.30 - 15.30 Poster highlights II (17 July)

1) KAISER Robin, LABEYRIE Guillaume and MINIATURA Christian (Nice)
Coherent back scattering of light in a laser cooled sample of Rubidium atoms

2) DOYA Valerie, LEGRAND Olivier and MORTESSAGNE Fabrice (Nice)
Wave chaos in multimode optical fibers

3) DOYA Valerie, LEGRAND Olivier and MORTESSAGNE Fabrice (Nice)
Spectral correlations in complex microwave cavities

4) BENENTI Giuliano (Saclay)
Chaotic enhancement in microwave ionization of Rydberg atoms

5) IHRA Wolfgang (London)
Ionization of Rydberg atoms in static electric and magnetic fields

6) YOSHIDA Shuhei (Knoxville)
Dynamic Stabilization of the Kicked Rydberg Atom

7) KOLOVSKY Andrey (Krasnoyarsk)
Chaotic Wannier-Bloch resonance states : quantum stabilization

8) IOMIN Alexander (Haifa)
Quantum response for chaotically interacting resonances

9) MIRBACH Bruno (Dresden)
Transition from quantum ergodicity to adiabaticity : dynamical localization in an amplitude
modulated pendulum

10) HU Bambi (Hong Kong)
The quantum Frenkel-Kontorova model

11) LI Baowen (Hong Kong)
Classical and quantum behavior of a kicked particle in 1-D billiard

12) DIAZ-SANCHEZ Anastasio (Murcie)
Numerical calculations of two interacting particles in a random potential

13) KOTTOS Tsampikos (Rehovot)
Quantum chaos on networks

14) PROSEN Tomaz (Ljubljana)
Transition from integrable to ergodic dynamics in a generic quantum many-body system in
thermodynamic limit

15) GEORGEOT Bertrand (Toulouse)
Quantum chaos in spin systems

16) MATEOS Jose L. (Mexico)
Dwell time of a chaotic particle in a classical oscillating potential barrier

17) KETZMERICK Roland (Göttingen)
Fractal conductance fluctuations in a soft wall stadium and a Sinai Billiard

18) PIECHON Frederic (Göttingen)
Duality between spatial and spectral fractal properties of wave-functions on quasiperiodic
chains

19) KRUSE Karsten (Göttingen)
Avoided band crossings and the spectrum of the kicked Harper model

20) ROSS Jonathan (Amsterdam)
Fractional revival in quantum mechanical oscillators

10.00 - 10.30 Poster highlights III (18 July)

1) PRANGE Richard (MD, USA) Quasiclassical perturbation theory

2) FRAHM Klaus (Toulouse) Quantum chaos in rough billiards

3) BORGONOVI Fausto (Brescia) Localization and cantori in the Bunimovich stadium

4) REE Suhan (Austin, TX) Chaos in a circular billiard with a straight cut (using the quantum web analysis)

5) BORONDO Florentino (Madrid) Scar formation at the edge of the chaotic region

6) HARAYAMA (Kyoto) Semiclassical Fredholm determinant for strongly chaotic billiards

7) LOUIS Enrique (Alicante) Magneto conductance in regular and chaotic cavities

8) CREAGH Stephen (Saclay) Tunnelling and chaos

9) MASPERO Giulio (Como) Quantum Poincare recurrences

10) MANTICA Giorgio (Como) Polygonal Billiards Revisited: A Model of Quantum A-Integrability

15.00 - 15.30 Poster highlights IV (18 July)

1) TANNER Gregor (Bristol) Quantum signature of classical diffusion

2) SCHANZ Holger (Dresden) Breaking discrete translation invariance in chaotic quantum systems

3) SPRINGUTH Dennis (Göttingen) Directional metal-insulator transition for Bloch electrons in a magnetic field

4) STEINBACH Frank (Göttingen) A covering property of Hofstadher's butterfly

5) ZHONG Jianxin (Göttingen) Level statistics in quantum billiards with multifractal eigenstates

6) GRIMM Uwe (Chemnitz) Level-spacing distributions of planar quasiperiodic tight-binding models

7) WIRTZ Ludger (Wien) Is there chaos in open quantum dots ?

8) PROVILLE Laurent (Saclay) Quantum bipolarons in the Holstein Hubbard model

9) FAURE Frederic (Grenoble) A chaotic quantum mapping analysed on a basis of quasi-modes associated to periodic orbits