# Conference Schedule

**Oral communications (including questions): 25 minutes (20+5)**

| Tuesday 7 | Wednesday 8 | Thursday 9 | Friday 10 |
|---|---|---|---|
| 8.30-9.30 Registration | 9.00-10.00 Plenary session. Jülicher | 9.00- 10.00 Plenary session. Liz | 9.30-10.30 Plenary session. Cruzeiro |
| 9.30-10.00 Presentation | 10.00-11.00 Plenary session. García Ojalvo | 10.00-11.00 Plenary session. Desroches | 10.30-11.30 Plenary session. Velarde (II) |
| 10.00-11.00 Antonio Castellanos in memoriam. His life and work | 11.00-11.30 Coffee break | 11.00-11.30 Coffee break | 11.30-12.00 Coffee break |
| 11.00-11.30 Coffee break | 11.30-12.45 Scientific Sessions. S2.1 Archilla/Kosevich/ Russell | 11.30-12.45 Scientific Sessions. S6.1 Lopesino/Balibrea-Iniesta/J.-Morales<br>11.30-12.45 Scientific Sessions. S6.2 Balibrea Gallego/ Caballero/ Karczewska | 12.00-13.15 Scientific Session. S10.1 Márquez-Durán/Urrutia/ (***) |
| 11.30- 12.30 Plenary session. Velarde (I). In Spanish. (Science for the lay audience) | 11.30-12.45 Scientific Sessions. S2.2 Rodríguez-Luis/Domínguez/ Gutiérrez-Santacreu | 12.45-14.00 Scientific Session. S7.1 Feijoo/ Martin-Vergara/Salmerón | 12.00-13.15 Scientific Session. S10.2 Pérez/ Revuelta/ Dubinko |
| 12.30-13.30 Plenary session. Villatoro. In Spanish. (Science for the lay audience) | 12.50-14.05 Scientific Sessions. S3.1 Korznikova/ Dmitriev/Hizhnyakov | 12.45-14.00 Scientific Session. S7.2 Grekova/ Ruiz-Botello/ Luque | 13.15-13.30 Conference closing |
| 13.30-15.30 Lunch | 12.50-14.05 Scientific Sessions. S3.2 Ramírez-Piscina/ Lozano/Barrio | 14.00-16.00 Lunch | |
| 15.30-16.30 Plenary session. Sievers<br>16.30-18.00 Poster session | 14.00-16.00 Lunch | 16.00-17.15 Scientific Session. S8.1 Salasnich/ Durán/ Cantarero | |
| 16.30-17.00 Coffee break and poster session | 16.00-17.15 Scientific Sessions. S4.1 Selyshchev/Michinel/ Paredes | 16.00-17.15 Scientific Session. S8.2 Morawetz/ Morawetz/ Zappalà | |
| 18.00-19.15 Scientific Sessions. S1.1 Henares-Molina/Molina/Calvo | 16.00-17.15 Scientific Sessions. S4.2 Becerra-Alonso/ Pla/Yazgan | 17.30-18.00 Coffee break | |
| 18.00-19.15 Scientific Sessions. S1.2 Fuentes/Checa/(***) | 17.15-17.45 Coffee break | 18.00-19.15 Scientific Session. S9.1 Torre/ Maroto/ Rozmej | |
| | 17.45-19.00 Scientific Session. S5.1 Malomed/Cuevas/ Carretero | 18.00-19.15 Scientific Session. S9.2 Zolotaryuk/Moleron/Mehrem | |
| | 17.30-19.00 Scientific Session. S5.2 F.-García/Vela/ Pérez | | |
| | 20.00 Panoramic tour | 21.00 Conference dinner | |

(***) Free slot. Changes since last revision noted in red°

**Plenary sessions**

1. Manuel G. Velarde (I). “Del surfeo en los ríos y en el mar al surfeo electrónico”.
2. Francisco R. Villatoro. “Las ondas gravitacionales como ondas no lineales”.
3. A. J. Sievers. “Shepherding intrinsic localized modes in microscopic and macroscopic nonlinear lattices”.
4. Frank Jülicher. “Droplet formation in living cells”.
5. Jordi Garcia-Ojalvo. “Dynamical regulation in living systems”.
6. Mathieu Desroches. “Simplifying canard theory with piecewise-linear systems Applications to neuronal dynamics”.
7. Eduardo Liz. “Complexity in discrete-time population models: other bifurcation diagrams are possible”.
8. Leonor Cruzeiro. “The folding of a small protein”.
9. Manuel G. Velarde (II). “From macrosurf (hydrodynamics) to nanosurf (electron transfer in crystals): a common line of nonlinear thinking with useful consequences”.

## Oral communications (including questions): 25 minutes (20+5)

**Session S1.1. Lecture room 1**

1. A. Henares-Molina, A. Martínez-González, S. Benzekry, VM Pérez-García. “Protracted metronomic therapies to target low-grade glioma malignant transformation”.
2. D. Molina J. Pérez-Beteta, A. Martínez-González, E. Arana, L.A. Pérez-Romasanta, and V.M. Pérez-García. “Brain tumors: Textural heterogeneity as predictor of survival in Glioblastoma”.
3. Gabriel F. Calvo, Arturo Álvarez-Arenas, Juan Belmonte-Beitia, Víctor M. Pérez-García. “Mathematical Modeling of the Emergence of Drug Resistance via Nonlinear and Nonlocal Exchange”.

**Session S1.2. Lecture room 2**

1. Algaba A., Fuentes N. García C.. “Normal forms for a class of tridimensional vector fields with free-divergence in its first component”.
2. A. Algaba, I. Checa, C. García, J. Giné. “Analytic integrability of some degenerate centers”.

**Session S2.1. Lecture room 1**

1. Juan F.R. Archilla, Yaroslav O. Zolotaryuk and Yuriy A. Kosevich. “Multiple lattice kinks in a cation lattice”.
2. Yuriy A. Kosevich. “Ultradiscrete supersonic electron polarons in nonlinear molecular chains with realistic interatomic potentials and electron-phonon interaction”.
3. F. Michael Russell. “Transport properties of quodons”.

**Session S2.2. Lecture room 2**

1. A. Algaba, M.C. Domínguez-Moreno, E. Gamero, M. Merino, A.J. Rodríguez-Luis. "Takens-Bogdanov bifurcations and resonances of periodic orbits in the Lorenz system".
2. A. Algaba, C. Domínguez, M. Merino. "Analysis of the Hopf-zero bifurcation and their degenerations in a quasi-Lorenz system".
3. Juan Vicente Gutiérrez-Santacreu. "Potential singularities for the Navier-Stokes equations".

**Session S3.1. Lecture room 1**

1. Elena A. Korznikova, Sergey V. Dmitriev. "Discrete breathers in metals and ordered alloys".
2. Sergey V. Dmitriev. "Discrete breathers in crystals: energy localization and transport".
3. V. Hizhnyakov, M. Klopov, A. Shelkan. "Spatially localized modes in anharmonic lattices without gaps in phonon spectrum".

**Session S3.2. Lecture room 2**

1. L. Ramírez-Piscina, J.M. Sancho. "Statistical physics of active ionic channels".
2. Álvaro Lozano, Marcos Rodríguez, Roberto Barrio, Sergio Serrano, Andrey Shilnikov. "Control of bursting synchronization in Central Pattern Generators".
3. Roberto Barrio, M. Angeles Martínez, Sergio Serrano, Daniel Wilczak. "When chaos meets hyperchaos: a Computer-assisted proof".

**Session S4.1. Lecture room 1**

1. Pavel A. Selyshchev, Pavel M. Bokov. "Peculiarity of propagating self-sustained annealing of radiation-induced interstitial loops".
2. H. Michinel, A. Paredes. "Simulating Supermassive Black Holes in Coherent Nonlinear Systems".
3. A. Paredes, H. Michinel. "Nonlinear Dark Matter Waves".

**Session S4.2. Lecture room 2**

1. David Becerra-Alonso, Mariano Carbonero-Ruz, Francisco Fernández-Navarro. "Using Extreme Learning Machines to cluster supervised data before classification".
2. Francisco Pla, Yvon Maday, Henar Herrero. "Reduced Basis method for a bifurcation in a Rayleigh-Bénard convection problem at low aspect ratio".
3. Ramazan Yazgan, Cemil Tunc. "Pseudo almost periodic solution for Nicholson's blowflies model with patch structure and linear harvesting terms".

**Session S5.1. Lecture room 1**

1. Boris A. Malomed. "Creation of stable three-dimensional solitons and vortices: New perspectives".
2. Jesús Cuevas-Maraver. "Solitons in the Nonlinear Dirac Equation".
3. R. Carretero-González, Wenlong Wang, R.M. Caplan, J.D.Talley, P.G. Kevrekidis, R.N. Bisset, C. Ticknor, D.J. Frantzeskakis, and L.A. Collins. "Vortex Rings in Bose-Einstein Condensates".

**Session S5.2. Lecture room 2**

1. V. Carmona, M. Desroches, S. Fernández-García, M. Krupa and A. Teruel "Saddle-node bifurcation of canard solutions in planar piecewise linear systems".
2. Enrique Ponce, Javier Ros, Elísabet Vela. "Boundary equilibrium bifurcations leading to limit cycles in piecewise linear systems".
3. C. Pérez, F. Benítez. "Feedback stabilization fo a predator-prey model by using switched systems".

**Session S6.1. Lecture room 1**

1. C. Lopesino, F. Balibrea-Iniesta, V. J. García-Garrido, S. Wiggins, A. M. Mancho. "Discrete and Continuous Lagrangian Descriptors for Hamiltonian systems".
2. Francisco Balibrea-Iniesta, Vícctor J. García-Garrido, Ana M. Mancho, Stephen Wiggins. "Arctic circulation from a Lagrangian perspective".
3. F. Jiménez-Morales, M.C. Lemos. "Quasiperiodic Intermittency in a Surface Reaction Model"

**Session S6.2. Lecture room 2**

1. Francisco Balibrea Gallego, Antonio Cascales Vicente. "On difference equations with predermined forbidden sets".
2. F. Balibrea, M.V. Caballero. "On autonomous and non-autonomous discrete versions of the Goodwin's model".
3. Anna Karczewska. "On stochastic second order Korteweg - de Vries type equations".

**Session S7.1. Lecture room 1**

1. David Feijoo, Dmitry A. Zezyulin, Vladimir V. Konotop. "Analysis of the soliton solutions in a parity-time-symmetric triple-core waveguide".
2. F. Martin-Vergara, F. Rus, and F. R. Villatoro. "Kink--Antikink Collisions in the Kryuchkov--Kukhar' Equation".
3. Luis J. Salmerón-Contreras, L. M. García-Raffi, Noé Jiménez, Ahmed Mehrem, Rubén Picó, Victor J. Sánchez-Morcillo, Kestutis Staliunas. "Acoustic gap solitons in layered media".

**Session S7.2. Lecture room 2**

1. Elena F. Grekova. "A class of nonlinear complex elastic media in the vicinity of an equilibrium state behaving as acoustic metamaterials".
2. F. Ruiz-Botello, A. Castellanos, MAS. Quintanilla, V. Tournat. "Effect of cohesion on sound propagation in disordered powder packings".
3. A. Luque, R.Oulad Ben Zarouala, M.J. Ávila, M.E. Peralta. "Complexity of non linear robust design problems in control. Randomized Algorithms Approach".

**Session S8.1. Lecture room 1**

1. L. Salasnich. "Solitons and vortices in Bose-Einstein condensates with finite-range interaction"
2. D. Clamond, D. Dutykh, A. Durán. "Computation of capillary-gravity generalized solitary waves".
3. Andrés Cantarero. "Nonlinear Raman scattering techniques"

**Session S8.2. Lecture room 2**

1. K. Morawetz, B. Kutschan, S. Thoms. “Dynamical mechanism of antifreeze proteins to prevent ice growth”.
2. K. Morawetz, B. Kutschan, S. Thoms. “Formation of brine channels in sea-ice as habitat for micro-algae”.
3. Dario A. Zappalà, Giulio Tirabassi, Cristina Masoller. “Investigating Hilbert frequency dynamics and synchronisation in climate data”.

**Session S9.1. Lecture room 1**

1. J. A. de la Torre, Pep Español, Aleksandar Donev. “Following top-down and bottom-up approaches to discretize non-linear stochastic diffusion equations”.
2. Ismael Maroto, Carmen Núñez, Rafael Obaya. “Exponential stability for nonautonomous functional differential equations with state dependent delay. Applications to neural networks”
3. Piotr Rozmej, Anna Karczewska, Eryk Infeld. “Adiabatic invariants of second order Korteweg - de Vries type equation”.

**Session S9.2. Lecture room 2**

1. Y. Zolotaryuk, I.O. Starodub. “Embedded solitons in the asymmetric array of Josephson junctions”
2. Miguel Molerón, Marc Serra-García, André Foehr, C. Chong, C. Daraio. “Dynamics of homogeneous and inhomogeneous nonlinear lattices formed by repelling magnets”.
3. A. Mehrem, N. Jiménez, L. J. Salmerón-Contreras, X. García-Andrés, R. Picó, L. M. García-Raffi, V. J. Sánchez-Morcillo. “Second harmonic generation in a chain of magnetic pendulums”.

**Session S10.1. Lecture room 1**

1. T. Caraballo, A.M. Márquez-Durán, F. Rivero. “Pullback attractor for a non-classical and non-autonomous diffusion equation containing infinite delay”.
2. Thierry Goudon, Luis Urrutia. “Analysis of kinetic and macroscopic models of pursuit–evasion dynamics”.

**Session S10.2. Lecture room 2**

1. A. Pérez, Gemma Huguet, Tere M.Seara. “On the role of Oscillations and Phases in Neural Communication”.
2. F. Revuelta, T. Bartsch, R. M. Benito, and F. Borondo. “The Geometry of Transition State Theory”.
3. Vladimir I. Dubinko, Denis V. Laptev. “Heterogeneous catalysis driven by localized anharmonic vibrations”.