

MICRO ENERGY 2017

Conference program

3 Jul. Mon

18.00 Welcome cocktail

4 Jul. Tue *Session I – Micro Energy Harvesting*

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| 09:00 – 9:30 | Kinetic Energy Harvesting: Rotating Systems, E. Yeatman (Imperial College) |
| 09:30 – 10:00 | Near-limits electrostatic kinetic energy harvesting from arbitrary input vibrations, Armine Karami, D. Galayko (UPMC) |
| 10.00 – 10:30 | Micro-scale energy harvesting systems and materials, F. Cottone (NiPS Lab) |
| 10:30 – 11:00 | Energy harvester design inspired from fractal geometries, C. Rusu (ACREO) |
| 11:00 – 11:30 | <i>Coffee break</i> |
| 11:30 – 12:00 | Enhancing energy harvesting by coupling monostable oscillators, R. R. Deza (Univ. Mar del Plata) |
| 12:00 – 12:30 | High Efficiency, Nonlinear Vibration Energy Harvesting using Electrical Switching, D. Mallick (Tyndall) |
| 12:30 – 13:00 | ONRG program, D. Cocker (ONRG) |
| 13:00 | <i>Lunch</i> |
| 15.00 – 15:30 | Analog Front End for Efficient Energy Harvesting from Piezoelectric Transducer, V. Bottarel (STMicroelectronics) |
| 15.30 – 16:00 | Progress in Computational Fluid Dynamics Simulation of a Microbial Fuel Cell, P. Farber (IMH) |
| 16.00 – 16:30 | <i>Coffee break</i> |

- 16.30 – 17:00 Energy harvesting from electrically polarized biological cells: a theoretical study, L. Catacuzzeno (UNIPG)
- 17.00 – 17:30 Quantum effects in nonlinear vibrational energy harvesting, A. Pattanayak (Carleton College)
- 17.30 – 18:00 Analytical and numerical simulations of energy harvesting using MEMS devices operating in nonlinear regime, A. Pasharavesh (Univ. Shariff)

5 Jul. Wed *Session II – Micro Energy Dissipation*

- 09:00 – 9:30 Mechanical resonators based on graphene, A. Bachtold (ICFO)
- 09:30 – 10:00 Embracing nonlinear dynamics in micro and nano-mechanical systems, D. Lopez (UPMC)
- 10.00 – 10:30 Fundamental energy costs for memory preservation, I. Neri (NiPS Lab)
- 10:30 – 11:00 A protocol for reaching equilibrium arbitrary fast, S. Ciliberto (Univ. Lyon)
- 11:00 – 11:30 *Coffee break*
- 11:30 – 12:00 Landauer's Limit and the Physicality of Information, N. Anderson (Univ. Massachusetts)
- 12:00 – 12:30 Energy Efficiency Limits in Brownian Circuits, I. Ercan (Univ. Bogazici)
- 12:30 – 13:00 Nonequilibrium information erasure, E. Lutz (Univ. Erlangen-Nurnberg)
- 13:00 *Lunch*
- 14.30 – 15:00 Dynamics and thermodynamics of driven open quantum systems using Landau-Zener theory, J. Thinga (Univ. Luxemburg)
- 15.00 – 15:30 Linear and non-linear thermodynamics of a kinetic heat engine with fast transformations, A. Vulpiani (Univ. La Sapienza)
- 15.30 – 16:00 Noise Induced Phase Transitions and Coupled Brownian Motors: Non Standard Hysteretic Cycles, H. Wio (Univ. Cantabria)
- 16.00 – 16:30 *Coffee break*

16.30 – 17:00	The super insulator: a new topological state of matter, M.C. Diamantini (NiPS Lab)
17.00 – 17:30	Brownian Transport in Narrow Channels, F. Marchesoni (Univ. Camerino)
17.30 – 18:00	Micro energy dissipation in coating materials, F. Travasso (NiPS Lab)
18.00 – 18:30	Micro-electromechanical logic devices operated at thermodynamic limits, M. Lopez-Suarez (NiPS Lab)

6 jul. Thu

09:00 – 9:30	Loss processes and efficiency limitations of Brownian motors, M. Jack (Univ. Otago)
09:30 – 10:00	Thermodynamics of the slow solutions to the gas-piston equations, D. Chiuchiù (NiPS Lab)
10.00 – 10:30	Irreversibility and Dissipation in General Finite State Automata, N. Ganesh (Univ. Massachusetts)
10:30 – 11:00	t.b.a.
11:00 – 11:30	<i>Coffee break</i>
<i>Session III – Micro Energy Storage</i>	
11:30 – 12:00	Energy in the Small: Scaling limits for micron-size energy sources, V. Zhirnov (SRC)
12:00 – 12:30	Solar energy storage: catalytic and photocatalytic processes for the production of H ₂ , I. Rossetti (Univ. Milano)
13:00	<i>Lunch</i>
15.00 - 17.00	Poster Session
17:30-18:30	Piazza Grande: excursion with <i>sightseeing train</i>
18:30-19:30	Palazzo dei Consoli: visit and lecture on the <i>IgUVine Tablets</i>
19:30	Crescia con prosciutto (traditional meal)

7 Jul. Fri *Session IV – Micro Energy Use*

09:00 – 9:30	Energy dissipation in single-electron devices, F. Gonzalez-Zalba (Hitachi Cambridge)
09:30 – 10:00	Capacitive Adiabatic Logic: a new paradigm for low-power computation, Gaël Pillonnet (CEA Leti)
10.00 – 10:30	Experiences of an autonomous wireless sensor and actuator network (WSAN) in IoT domotic application, L. Perilli (STMicroelectronics)
10:30 – 11:00	Spin-wave logic: a new paradigm for low energy computing, M. Madami (UNIPG)
11:00 – 11:30	<i>Coffee break</i>
11:30 – 12:00	Computing with nanomechanical resonators, S. Hourri (TU Delft)
12:00 – 12:30	Development of an energetically autonomous system for indoor tracking, F. Ambroglini (Wisepower)
12:30 – 13:00	
13:00	<i>Lunch</i>
15.00 – 15:30	Development of an ultra low power wireless communication technology, K. Takeuchi (NTT)
15.30 – 16:00	A Clever Strategy for Computing by Micro-Energy: Exploiting the Emergent Properties of Out-of-Equilibrium Systems, P. Gentili (UNIPG)
16.00 – 16:30	<i>Coffee break</i>
16.30 – 17:00	Plenty of Room at the Bottom? Micropower Deep Learning for IoT end-nodes, L. Benini (ETHZ)
17.00 – 17:30	Energy management for autonomous wireless sensors, F. Orfei (NiPS Lab)
18.30 – 20:00	Shuttle transfer from the conference site to Hotel dei Cappuccini
20:00	Gala dinner at the Hotel dei Cappuccini
22:30 – 23:30	Transfer from the from Hotel dei Cappuccini to the conf. site