

Program

Workshop on stochastic thermodynamics III

Note: all times in Mountain Daylight Time (UTC -6h)

Thursday 26th May 2022

Tutorial

Chair: Sagawa / Parrondo

7:00 AM - 7:10 AM			<i>Opening Remarks</i>
7:10 AM - 8:30 AM	Tutorial	Simone Pigolotti	<i>Introduction to stochastic thermodynamics</i>
8:40 AM - 10:00 AM	Tutorial	Masafumi Oizumi	<i>Introduction to information geometry</i>
10:10 AM - 11:30 AM	Tutorial	Andreas Dechant	<i>Thermodynamic uncertainty relations</i>
11:40 AM - 1:00 PM	Tutorial	Christopher Jarzynski	<i>Thermodynamics of systems with strong coupling</i>

Friday 27th May 2022

Poster session

1. Fundamental Principles

Cai Dieball, Matthew Gerry, Pedro Harunari, Anthony Kiely, Sreekanth K Manikandan, Atul Tanaji Mohite, Andrea Plati

2. Physics and Chemistry

Aubin Archambault, Miguel Aguilera, Avishek Das, Mauricio del Razo, Adam Frim, Jordan Juritz, Kazuki Nakamura, Benjamin Qureshi, Jesús Rubio, Shesha Gopal Marehalli Srinivas

3. Biophysics & Active Matter

Nazul Jared Lopez-Alamilla, Daiki Sekizawa

4. Quantum Stochastic Thermodynamics

Nicholas Anto-Sztrikacs, Joshua Eglinton, Paolo Andrea Erdman, Guilherme de Sousa, Kenza Hammam, Hisao Hayakawa, Ruo Cheng Huang, Felix Hubmann, Miku Ishizaki, Michael Kewming, Shayan Majidy, Anthony Munson, Kacper Prech, Onur Pusuluk, Andrea Solfanelli, Jeongrak Son, Philip Taranto

5. Computation & Information Processing

Debankur Bhattacharyya, Ashwin Gopal, Gülce Kardeş, Daiki Kiyooka, Asawari Pagare, Zhongmin Zhang

Monday 30th May 2022

Fundamental Principles

Chair: Esposito / Green

7:00 AM - 7:45 AM	Colloquium	Masahito Ueda	<i>Universal Thermodynamic Uncertainty Relation in Non-Equilibrium Dynamics</i>
7:45 AM - 8:15 AM	invited	Keiji Saito	<i>Dynamical State Mobility and Unification of Optimal Transport</i>
8:15 AM - 8:45 AM	invited	Sarah Loos	<i>The role of non-conservative interactions in nonequilibrium systems</i>
8:45 AM - 9:30 AM	Discussion		<i>Discussion session</i>
9:45 AM - 10:00 AM	Lightning	Naruo Ohga	<i>Legendre duality in stochastic thermodynamics: A construction based on information geometry</i>
10:00 AM - 10:15 AM	Lightning	Cillian Cockrell	<i>Stochastic Thermodynamics of a non-Markovian Dynamical System</i>
10:30 AM - 11:00 AM	invited	Patrick Pietzonka	<i>Classical Pendulum Clocks Break the Thermodynamic Uncertainty Relation</i>
11:00 AM - 11:30 AM	invited	Jordan Horowitz	<i>Thermodynamic limits to nonequilibrium response</i>

Tuesday 31st May 2022

Physics and Chemistry

Chair: Kolchinsky / Millan

7:00 AM - 7:45 AM	Colloquium	Massimiliano Esposito	<i>Nonequilibrium Thermodynamics of Complex Systems</i>
7:45 AM - 8:15 AM	invited	Gili Bisker	<i>Inferring entropy production in nonequilibrium systems from partially observed statistics</i>
8:15 AM - 8:45 AM	invited	Nahuel Freitas	<i>An electronic Maxwell demon that can work at macroscopic scales</i>
8:45 AM - 9:30 AM	Discussion		<i>Discussion session</i>
9:45 AM - 10:00 AM	Lightning	Kohei Yoshimura	<i>Fluctuation and thermodynamic trade-off relations in deterministic chemical reaction networks</i>
10:00 AM - 10:15 AM	Lightning	Vivien Lecomte	<i>Schnakenberg without Schnakenberg</i>
10:15 AM - 10:30 AM	Lightning	Steven Blaber	<i>Steps minimize dissipation in rapidly driven stochastic systems</i>
10:30 AM - 11:00 AM	invited	Jason Green	<i>Speed limits on thermodynamic costs and benefits</i>
11:00 AM - 11:30 AM	invited	Grant M. Rotskoff	<i>Energetic costs of nonequilibrium control in active self-assembly</i>

Wednesday 1st June 2022

Biophysics and Active Matter

Chair: Shiraishi / Loos

7:00 AM - 7:45 AM	Colloquium	Udo Seifert	<i>Thermodynamic inference: Principles and applications</i>
7:45 AM - 8:15 AM	invited	Rosalba Garcia Millan	<i>Entropy Production of Non-reciprocal Interactions</i>
8:15 AM - 8:45 AM	invited	Thomas Ouldridge	<i>Avoiding equilibrium in a minimal molecular information-processing system</i>
8:45 AM - 9:30 AM	Discussion		<i>Discussion session</i>
9:45 AM - 10:00 AM	Lightning	Matthew Leighton	<i>Dynamic and thermodynamic bounds for collective motor-driven transport</i>
10:00 AM - 10:15 AM	Lightning	Christopher Lynn	<i>Decomposing the local arrow of time in interacting systems</i>
10:15 AM - 10:30 AM	Lightning	Gennaro Tucci	<i>Modelling the active oscillations of the hair bundle of the bullfrog</i>
10:30 AM - 11:00 AM	invited	Yuhai Tu	<i>Nonequilibrium Thermodynamics of Coupled Molecular Clocks: The Energy Cost of Synchronization</i>

Thursday 2nd June 2022

Quantum Stochastic Thermodynamics

Chair: Saito / Freitas

7:00 AM - 7:45 AM	Colloquium	Takahiro Sagawa	<i>Three Approaches to Quantum Thermodynamics</i>
7:45 AM - 8:15 AM	invited	Kay Brandner	<i>Thermodynamic Uncertainty Relations for Coherent Transport</i>
8:15 AM -8:45 AM	invited	Nelly Ng	<i>Quantum field thermal machines</i>
8:45 AM - 9:30 AM	Discussion		<i>Discussion session</i>
9:45 AM - 10:00 AM	Lightning	Hiroyasu Tajima	<i>Superconducting-like heat current: Effective cancellation of current-dissipation trade off by quantum coherence</i>
10:00 AM - 10:15 AM	Lightning	Sungguen Ryu	<i>Beating Carnot efficiency with periodically driven chiral conductors</i>
10:15 AM - 10:30 AM	Lightning	Aleksander Lasek	<i>Experimental observation of thermalisation with noncommuting charges</i>
10:30 AM - 11:00 AM	invited	Juan Parrondo	<i>Scattering and thermalization: wave-particle duality hits quantum thermodynamics</i>
11:00 AM - 11:30 AM	invited	Martí Perarnau-Llobet	<i>Finite-time bounds on the probabilistic violation of the second law of thermodynamics</i>

Friday 3rd June 2022

Computation and Information Processing

Chair: Ng / Horowitz

7:00 AM - 7:45 AM	Colloquium	David Wolpert	<i>STOCHASTIC THERMODYNAMICS OF DISTRIBUTED SYSTEMS</i>
7:45 AM - 8:15 AM	invited	Artemy Kolchinsky	<i>The algorithmic cost of a classical or quantum single-shot computation</i>
8:15 AM - 8:45 AM	invited	Naoto Shiraishi	<i>Undecidability in quantum thermalization</i>
8:45 AM - 9:30 AM	Discussion		<i>Discussion session</i>
9:45 AM - 10:00 AM	Lightning	Lorenzo Buffoni	<i>Spontaneous fluctuation-symmetry breaking and the Landauer principle</i>
10:00 AM - 10:15 AM	Lightning	Salambô DaGo	<i>When it comes to information processing, fast is hot, and hot is expensive</i>
10:15 AM - 10:30 AM	Lightning	Paul Riechers	<i>Two paradigms for energetically efficient computing</i>
10:30 AM - 11:00 AM	invited	David Limmer	<i>Stochastic thermodynamics bounds on noisy circuit operation</i>
11:00 AM - 11:30 AM	invited	Jean-Charles Delvenne	<i>Thermo-Kinetic Relations for elementary computing devices</i>