



COMPLEXITY, CRITICALITY AND COMPUTATION (C³) INTERNATIONAL BIANNUAL SYMPOSIUM

PROGRAM 11TH DEC – 13TH DEC

MONDAY 11 TH DECEMBER 2017	
DAY 1: STATISTICAL PHYSICS AND CRITICAL PHENOMENA	
09:30 - 09:45	Introduction Mikhail Prokopenko, The University of Sydney
09:45 - 10:45	David Wolpert , Santa Fe Institute, USA <i>"The minimal hidden computer in any visible computation"</i>
10:45 - 11:00	Morning Break
11:00 - 11:30	Artemy Kolchinsky, Santa Fe Institute, USA <i>"Grounding semantic information in the dynamics of non-equilibrium systems"</i>
11:30-12:00	Richard Spinney, The University of Sydney <i>"Distributed information processing and thermodynamics"</i>
12:00 - 13:00	Dominique Chu , University of Kent, UK <i>"The thermodynamics of universal computation"</i>
13:00 – 14:00	Lunch Break
14:00-14:30	Peter Harrowell, The University of Sydney <i>"Structural Explanations for Unstructured Materials: the Physics of the Glass Transition"</i>
14:30 - 15:00	Kirill Glavatskiy, The University of Sydney <i>"Phase transitions under constraints: from confinement to complex networks"</i>
15:00 - 15:30	Ramil Nigmatullin, The University of Sydney <i>"Self-organization and phase transitions in ion Coulomb crystals"</i>
15:30-16:00	Afternoon Break
16:00 – 17:00	Francesco Caravelli , Los Alamos National Laboratory, USA <i>"Non-equilibrium properties of memristive networks: connections to spin models"</i>

TUESDAY 12TH DECEMBER 2017**DAY 2: SOCIAL DYNAMICS AND EXTREME EVENTS**

09:30 – 10:30	Paul Ormerod , University College, London <i>"Economics, Complexity and Criticality"</i>
10:30- 11:00	Morning Break
11:00 - 11:30	Somwrita Sarkar, The University of Sydney <i>"Urban Scaling Laws: Foundations, Implications and Gaps"</i>
11:30-12:00	Michael Harre, The University of Sydney <i>"Economic Crises in Agent Based Models of Housing Markets "</i>
12:00 - 12:30	Dan Penny, The University of Sydney <i>"Emergent criticality in infrastructure links urban collapse to climatic forcing: the case of Angkor, Cambodia (14-15th century C.E.)"</i>
12:30-13:00	Mikhail Prokopenko, The University of Sydney <i>"Thermodynamics of the Greater Sydney: are we close to a phase transition?"</i>
13:00 – 14:00	Lunch Break
14:00-15:00	Eduardo Altmann , The University of Sydney <i>"Complex Systems Approaches to Text Analyses"</i>
15:00-15:30	Deborah Bunker, The University of Sydney <i>"Social Media Platforms: Their Impact on Complex Self-Organisation (Social) Systems in Disaster Events"</i>
15:30-16:00	Afternoon Break
16:00 – 16:30	Erik Aslaksen <i>"The Individual, Society, and the Role of Information: A project to model the evolution of society; in particular, its stability, through a top-down application of the system concept."</i>
16:30-17:00	Alex Kalloniatis, Australian Defence Science & Technology Group <i>"Gaining Advantage from Complexity in Defence: A New DST Research Initiative"</i>

WEDNESDAY 13TH DECEMBER 2017**DAY 3: COMPUTATIONAL BIOLOGY AND TIPPING POINTS**

09:30 – 10:30	Tim Germann Los Alamos National Laboratory, USA <i>"From Atoms to Agents: Frontiers in High-Performance Computing"</i>
10:30- 11:00	Morning Break
11:00 - 11:30	Joseph Lizier, The University of Sydney <i>"What information dynamics can tell us about...brains"</i>
11:30-12:00	Ben Fulcher, The University of Sydney <i>"Automating biomedical time-series analysis using massive feature extraction"</i>
12:00 - 12:30	Tanya Latty, The University of Sydney <i>"Resilience in social insect infrastructure systems"</i>
12:30-13:00	Emanuele Crosato, The University of Sydney <i>"Thermodynamic analysis of collective motion during criticality"</i>
13:00 – 14:00	Lunch Break
14:00-15:00	Manoj Gambhir , Monash University and IBM Research, Australia <i>"When will computational epidemiologists be replaced by AI"</i>
15:00-15:30	Oliver Cliff, The University of Sydney <i>"Introducing ACEMod Simulator – Australian Census-based Epidemic Modelling"</i>
15:30-16:00	Afternoon Break
16:00 – 17:00	Closing address Prof Paul Davies , Arizona State University, Regents' Professor and Director of the Beyond Center for Fundamental Concepts in Science, Co-Director ASU Cosmology Initiative <i>"The complexity of the universe"</i>
17:00-17:05	Best Presentation Award and Wrap-up