COMPLEXITY, CRITICALITY AND COMPUTATION (C³) INTERNATIONAL BIANNUAL SYMPOSIUM

PROGRAM 11TH DEC – 13TH DEC

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

TUESDAY 12TH DECEMBER 2017	
DAY 2: SOCIAL DYNAMICS AND EXTREME EVENTS	
09:30 – 10:30	**Paul Ormerod,** Volterra Partners, UK *"Economics, Complexity and Criticality"*
10:30- 11:00	**Morning Break**
11:00 - 11:30	Somwrita Sarkar, The University of Sydney *"Urban Scaling Laws: Foundations, Implications and Gaps"*
11:30-12:00	Michael Harre, The University of Sydney *"Economic Crises in Agent Based Models of Housing Markets "*
12:00 - 12:30	Dan Penny, The University of Sydney *"Emergent criticality in infrastructure links urban collapse to climatic forcing: the case of Angkor, Cambodia (14-15th century C.E.)"*
12:30-13:00	Mikhail Prokopenko, The University of Sydney *"Thermodynamics of the Greater Sydney: are we close to a phase transition?"*
13:00 – 14:00	**Lunch Break**
14:00-15:00	**Eduardo Altmann,** The University of Sydney *"Complex Systems Approaches to Text Analyses"*
15:00-15:30	Deborah Bunker, The University of Sydney *"Social Media Platforms: Their Impact on Complex Self-Organisation (Social) Systems in Disaster Events"*
15:30-16:00	**Afternoon Break**
16:00 – 16:30	Erik Aslaksen *"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."*
16:30-17:00	Alex Kalloniatis, Australian Defence Science & Technology Group *"Gaining Advantage from Complexity in Defence: A New DST Research Initiative"*

	WEDNESDAY 13TH DECEMBER 2017
	DAY 3: COMPUTATIONAL BIOLOGY AND TIPPING POINTS
09:30 – 10:30	**Tim Germann** Los Alamos National Laboratory, USA *"From Atoms to Agents: Frontiers in High-Performance Computing"*
10:30- 11:00	**Morning Break**
11:00 - 11:30	Joseph Lizier, The University of Sydney *"What information dynamics can tell us about…brains"*
11:30-12:00	Ben Fulcher, The University of Sydney *"Automating biomedical time-series analysis using massive feature extraction"*
12:00 - 12:30	Tanya Latty, The University of Sydney *"Resilience in social insect infrastructure systems"*
12:30-13:00	Emanuele Crosato, The University of Sydney "*Thermodynamic analysis of collective motion during criticality"*
13:00 – 14:00	**Lunch Break**
14:00-15:00	**Manoj Gambhir,** Monash University and IBM Research, Australia "*When will computational epidemiologists be replaced by AI"*
15:00-15:30	Oliver Cliff, The University of Sydney "*Introducing ACEMod Simulator – Australian Census-based Epidemic Modelling"*
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 *"The complexity of the universe"*
17:00-17:05	**Best Presentation Award and Wrap-up**