

# FOUNDATIONS SAT, 16 JULY 2016

Opening Events: NAB Lower Ground (LG) Floor, Sheikh Zayed Theatre				
9:00	Registration and Coffee			
9:45	Miklós Rédei: Welcome Remarks			
10:00	Richard Dawid: Opening Lecture, "Delimiting the Unconceived: Extending the Range of Confirmation in Physics"			
11:30	Coffee Break: NAB Lower Ground (LG) Floor			
Session 1 (NAB 1.04)	Session 2 (NAB 1.07)	Session 3 (NAB 2.04)	Session 4 (NAB 2.06)	
<i>Chair: Eric Cavalcanti</i>	<i>Chair: Karim Thébault</i>	<i>Chair: Oliver Pooley</i>	<i>Chair: Harvey Brown</i>	
12:00	<b>Leonardo Disilvestro and Damian Markham:</b> Quantum Protocols within Spekkens' Toy Model	<b>Daniele Oriti:</b> Space and time are emergent, in quantum gravity. What is cosmology, then?	<b>Peter Evans:</b> Fluid mechanical models and causally symmetric approaches to quantum mechanics	<b>Vincent Ardoirel:</b> Boltzmann-Grad limit and irreversibility
12:30	<b>Ronnie Hermens:</b> Constraints on Macrorealism Without Assuming Non-Invasive Measurability	<b>Andreas Pithis:</b> GFT Cosmology and emergent spacetime	<b>Charles Sebens:</b> Constructing and Constraining Wave Functions for Identical Quantum Particles	<b>Matt Farr:</b> Causation and Time Reversal
13:30	Break For Lunch: On Your Own			
<i>Chair: Foad Dizadji-Bahmani</i>	<i>Chair: Jeremy Butterfield</i>	<i>Chair: Roman Frigg</i>	<i>Chair: John Manchak</i>	
14:30	<b>Panayiotis Nicos Kaloyerou:</b> Critique of Quantum Optical Experimental Refutations of Bohr's Principle of Complementarity, of the Wootters-Zurek Principle of Complementarity, & of the Particle-Wave Duality Relation	<b>Jeroen van Dongen:</b> Can we understand the black hole information paradox by studying its history?	<b>Michael Cuffaro:</b> Quantum Reflections on Computational Complexity	<b>Gabriele Carcassi, Christine A. Aidala, David John Baker and Lydia Bieri:</b> From physical assumptions to classical Hamiltonian and Lagrangian particle mechanics
15:00	<b>Alexei Grinbaum:</b> How device-independent approaches change the meaning of Physics	<b>Dennis Dieks:</b> Emergence in Holographic Scenarios for Gravity	<b>Dominic Horsman and Samson Abramsky:</b> Programming the Demon: computational verification for Landauer's erasure hypothesis	<b>Thomas Barrett:</b> Equivalent and Inequivalent Formulations of Classical Mechanics
15:30	<b>Emily Adlam:</b> Quantum Mechanics and Global Determinism	<b>Sebastian De Haro:</b> Diffeomorphism Invariance versus Duality, or: The Holographic Hole	<b>Dominic Horsman, Viv Kendon and Susan Stepney:</b> When does a physical system compute?	<b>Bryan W Roberts and Nicholas J Teh:</b> Kähler Representation Theory
16:00	<b>Olimpia Lombardi and Cristian López:</b> Quantum information or quantum coding?	<b>Nick Huggett:</b> How Space Emerges in Non-Commutative Field Theory	<b>Carina Prunkl:</b> Is there a thermodynamical cost associated with some interpretations of quantum theory?	<b>Keming Chen:</b> Quantum Theory without Complex Numbers: Progress on the Nominalization of Quantum Theory
16:30	Coffee Break: NAB Lower Ground (LG) Floor			
<i>Chair: Alexei Grinbaum</i>	<i>Chair: Karim Thébault</i>	<i>Chair: Foad Dizadji-Bahmani</i>	<i>Chair: Oliver Pooley</i>	
17:00	<b>Bernard Kay:</b> The Matter Gravity Entanglement Hypothesis	<b>Keizo Matsubara:</b> The reality behind a duality	<b>Charlotte Werndl and Roman Frigg:</b> Clarifying the Relationship Between the Boltzmannian and the Gibbsian Concept of Equilibrium in Statistical Mechanics	<b>Marco Giovanelli:</b> The Reichenbach-Einstein Debate on the Geometrization of the Electromagnetic field
17:30	<b>Andrea Mari, Giacomo De Palma and Vittorio Giovannetti:</b> Observing quantum superpositions of large masses or large charges requires a minimum time	<b>Tushar Menon:</b> Taking up superspace- what it would take to be a realist about superspace?	<b>Joshua Luczak:</b> On the Aims of Statistical Mechanics	<b>Fedde Benedictus:</b> Varieties of Frequentism
18:00	<b>Douglas Earl:</b> On the Concept of Superposition in Quantum Field Theories	<b>John Manchak:</b> Is Spacetime Inextendible?	<b>Christian Loew:</b> The Thermodynamic Asymmetry and the Direction of Time	<b>Joshua Eisenthal:</b> Ontological vs. Logical Foundations in Hertz's Mechanics
18:30	<b>Giulio Chiribella and Carlo Maria Scandolo:</b> Entanglement and thermodynamics in general probabilistic theories	<b>Juliusz Doboszewski:</b> Exotic manifolds and relativistic spacetimes	<b>Marc Holman:</b> Issues of Unity, Uniqueness and Universality in the Quest for Quantum Gravity	<b>Ryan Samaroo:</b> Corollary VI to the Laws of Motion: What it Does and Does Not Establish

## FOUNDATIONS SUN, 17 JULY 2016

	Session 1 (NAB 1.04)	Session 2 (NAB 1.07)	Session 3 (NAB 2.04)	Session 4 (NAB 2.06)
	<i>Chair: Eric Cavalcanti</i>	<i>Chair: Jeremy Butterfield</i>	<i>Chair: Jim Weatherall</i>	<i>Chair: Charles Sebens</i>
10:00	<b>Matt Leifer:</b> Does time-symmetry in quantum theory imply retrocausality?	<b>J. Brian Pitts:</b> Observables in Equivalent Hamiltonian Formulations of a Theory	<b>Francesca Vidotto:</b> On the relational nature of contemporary physics	<b>Nahuel Sznajderhaus:</b> Interstructuralist account of the quantum-classical limit as a challenge for scientific realism
10:30	<b>Mathias Frisch and Michael Dascal:</b> Retrocausation in Quantum Mechanics	<b>H.G. Callaway:</b> Have the Einstein Field Equations Changed their Meaning? General Relativity as an Effective Field Theory	<b>Aleks Kissinger, Bob Coecke and Chris Heunen:</b> Quantum Picturalism: a story of processes and connectivity	<b>Adán Sus:</b> How to be a realist about Minkowski spacetime without believing in magical explanations: The Dynamical Approach?
11:00	<b>Coffee Break: NAB Lower Ground (LG) Floor</b>			
	<i>Chair: Nick Huggett</i>	<i>Chair: Jim Weatherall</i>	<i>Chair: Sam Fletcher</i>	<i>Chair: Charles Sebens</i>
11:30	<b>Cristian López:</b> What's the deal with the arrow of time in quantum mechanics?	<b>Erik Curiel:</b> On the Cogency of Quantum Field Theory on Curved Spacetime	<b>Sorin Bangu:</b> Anderson's Constructionism: the case of the BCS superconductivity model	<b>Christian de Ronde:</b> Quantum Superpositions and the Representation of Physical Reality Beyond Measurement Outcomes and Mathematical Structures
12:00	<b>Daniel Bedingham and Owen Maroney:</b> Time symmetry in wave function collapse	<b>John Dougherty:</b> Equality and Separability in Gauge Theories	<b>Niels Martens:</b> Against Reducing Newtonian Mass to Kinematical Quantities	<b>Newton Da Costa and Christian de Ronde:</b> Critical Remarks on the Applicability of Metaphysical Identity in Quantum Mechanics
12:30	<b>Anthony Sudbery:</b> Past, Present and Future in Quantum Mechanics	<b>Mauro Stenico:</b> The role of heuristic categories in the modern cosmology	<b>Patricia Palacios:</b> Phase transitions: A challenge for reductionism or for "Nagelianism"?	<b>Song Tian:</b> Why Does Quantum Mechanics Need to be Explained? An Explanation for Niels Bohr's Complementary Principle from His Concept of "Phenomenon"
13:00	<b>Stefano Gogioso:</b> Internal time observables in finite-dimensional quantum theory	<b>Enno Fischer:</b> Assessing the Past Hypothesis	<b>Marina Baldissera:</b> A Role for Spatiotemporal Scales in Modeling	<b>Lucas Dunlap:</b> The Information-Theoretic Interpretation of Quantum Theory & Ontic Structural Realism
13:30	<b>Break For Lunch: On Your Own</b>			
	<i>Chair: Miklos Rédei</i>	<i>Chair: Brian Pitts</i>	<i>Chair: Roman Frigg</i>	<i>Chair: Nick Huggett</i>
15:00	<b>Philipp Hoehn and Christopher Wever:</b> Quantum theory from rules on information acquisition	<b>Neil Dewar:</b> Maxwell-Cartan gravitation	<b>Jonathan Bain:</b> Emergence and Mechanism in the Fractional Quantum Hall Effect	<b>Pablo Acuña:</b> Minkowski Spacetime and Lorentz Invariance: the cart and the horse or two sides of a single coin?
15:30	<b>Jeremy Steeger:</b> Sheaves, generalized probability, and the hierarchy of quantum contextuality	<b>Thomas Moller-Nielsen:</b> Symmetry, Interpretation, and Motivation	<b>Matthias Egg:</b> Real Patterns without Underlying Stuff	<b>Márton Gömöri and László E. Szabó:</b> For the 40th Birthday of Bell's Spaceships
16:00	<b>John Corbett:</b> On Einstein Locality for Quantum Systems	<b>James Weatherall:</b> Gravitational Energy and a Weyl-like Tensor in Geometrized Newtonian Gravitation	<b>Shan Gao:</b> An argument for psi-ontology in terms of protective measurements	<b>Kevin Coffey:</b> Understanding Mass and Energy in Special Relativistic Dynamics
16:30	<b>Eric Cavalcanti:</b> Bell's theorem and the measurement problem: reducing two mysteries to one?	<b>Radin Dardashti:</b> The Epistemology of No-Go Theorems	<b>Mario Hubert:</b> A Primitive Ontology Without Properties	<b>Samuel Fletcher:</b> On the Alleged Incommensurability of Newtonian and Relativistic Mass
17:30	<b>Conference Drinks &amp; Dinner: Old Building (OLD) 6th Floor, Shaw Library</b>			
19:30	<b>Carlo Rovelli:</b> Public Lecture, "Why Physics Needs Philosophy"			

## FOUNDATIONS MON, 18 JULY 2016

*Note: The Monday sessions are in a different building than the other two days — Old Building (OLD).*

	Session 1 (OLD 3.28)	Session 2 (OLD Vera Anstey Room, mezzanine)	Session 3 (OLD 5th Floor, Graham Wallas Room - by the Senior Common Room)
	<i>Chair: Miklos Redei</i>	<i>Chair: Alexei Grinbaum</i>	<i>Chair: Harvey Brown</i>
9:30	<b>Laurenz Hudetz:</b> Strengthening Categorical Equivalence: Towards an Adequate Notion of Structural Equivalence of Theories	<b>Markus Mueller and Philipp Hoehn:</b> An operational approach to spacetime symmetries: Lorentz transformations from quantum communication	<b>Marco Corgini:</b> Bose Einstein condensation. From infinitely extended systems to trapped Bose Gases
10:00	<b>Sean Tull:</b> Operational Theories of Physics as Categories	<b>Johannes Kleiner:</b> Causal Fermion Systems: A New Candidate for a Unified Physical Theory	<b>Geoffrey Sewell:</b> On the Question of Lorentz Transformations of Temperature
10:30	<b>Coffee Break:</b> OLD 4th Floor Bar		
	<i>Chair: Sam Fletcher</i>	<i>Chair: Bryan W Roberts</i>	<i>Chair: John Manchak</i>
11:00	<b>Mark Addis:</b> Categorical Abstract Model Theory and the Syntax of Physical Theories	<b>Sebastian Fortin and Federico Holik:</b> Towards a dynamics for quantum logic	<b>Jeffrey Barrett:</b> Typicality in Pure Wave Mechanics
11:30	<b>Ko Sanders:</b> What can (mathematical) categories tell us about space-time?	<b>Sebastian Fortin and Olimpia Lombardi:</b> Quantum mechanics: symmetry and interpretation	<b>Rathindra Nath Sen:</b> Quantum-classical interactions. Theory, experiment and metaphysics (Quantum mechanics for anarchists)
12:00	<b>Break for Lunch:</b> On Your Own		
13:30	<p><b>Greenwich Excursion:</b> Meet at 1:30 outside NAB at the door where you entered on Saturday.            We'll walk together to Embankment and take the commuter boat to Greenwich.            From there we'll walk up the hill into Greenwich park to see Royal Observatory and Meridian Line.</p>		