

PROGRAM

FRIDAY, OCTOBER 23rd

VARIETIES OF REALIST APPROACHES TO QUANTUM MECHANICS

9:30–10:15

KEYNOTE LECTURE

Yakir Aharonov (*Tel Aviv University, IL, and Chapman University, Orange, USA*)

Time Symmetric Reformulation of Quantum Mechanics

10:15–10:30

Coffee break

10:30–11:00

Matt Leifer (*Perimeter Institute, Waterloo, CA*)

The reality of the quantum state from Kochen-Specker contextuality

11:00–11:30

Martin Ringbauer (*Griffith University, Brisbane, AU*)

Measurements on the Reality of the Wavefunction

11:30–12:00

Eric Cavalcanti (*Griffith University, Brisbane, AU*)

The Two Bell's Theorems of John Bell and Causal Emergence

12:00–14:00

Lunch break

Chair: Markus Arndt

14:00–14:45

KEYNOTE LECTURE

Nicolas Gisin (*Université de Genève, CH*)

Quantum correlations in Newtonian space and time:

arbitrarily fast communication or nonlocality

14:45–15:15

Travis Norsen (*Smith College, Northampton, USA*)

Bohmian conditional wave functions and the reality of the quantum state

15:15–15:30

Coffee break

15:30–15:50

Xavier Oriols (*Universitat Autònoma de Barcelona, ES*)

Can Decoherence make quantum theories unfalsifiable?

Understanding the quantum-to-classical transition without it

15:50–16:20

Jan Walleczek (*Phenosience Laboratories, Berlin, DE*)

Free Will Theorems in Nonlocal Information Transfer
without Nonlocal Communication

16:20–16:50

Gerhard Grössing (*Austrian Institute for Nonlinear Studies, Vienna, AT*)

Conditions for Lorentz-invariant superluminal information
transfer without signaling

16:50–17:05

Coffee break

Chair: Theo Nieuwenhuizen

17:05–17:25

Herman Batelaan (*University of Nebraska, Lincoln, USA*)

Double slit electron diffraction

17:25–17:45

Ana María Cetto (*Univ. Nacional Autónoma de México, MX*)

Two-electron system correlated by the zero-point field:
physical explanation for the spin-statistics connection

17:45–18:05

Hrvoje Nikolić (*Ruder Bošković Institute, Zagreb, HR*)

How to reconcile non-local reality and local non-reality

18:05–18:25

Ariel Caticha (*University at Albany, USA*)

Trading drift and fluctuations in entropic dynamics:
a new symmetry for quantum mechanics

18:30-20:00

Dinner Buffet and Poster Presentations

20:00–22:00

Poster Presentations and Discussion

SATURDAY, OCTOBER 24th

NEW EXPERIMENTS AND THEORIES IN QUANTUM FOUNDATIONS

Chair: Jan Walleczek

9:00–9:45

KEYNOTE LECTURE

Aephraim Steinberg (*University of Toronto, CA*)

Probing “surreal” elements of quantum physics using weak measurements

9:45–10:15

Markus Arndt (*University of Vienna, AT*)

Quantum optics with nanobiological matter

10:15–10:30

Coffee break

10:30–11:00

Jeff Tollaksen (*Chapman University, Orange, USA*)

The Quantum pigeonhole principle and localizing

Kochen-Specker contextuality with weak measurements

11:00–11:20

Yuji Hasegawa (*Atominstytut, TU Vienna, AT*)

Foundations of Quantum Mechanics studied in Matter-Wave Optics.

Quantum Cheshire-Cat and Uncertainty Relations

11:20-11:40

Gregor Weihs (*University of Innsbruck, AT*)

Multipath Interference Tests of Quantum Mechanics

11:40–12:10

Konstantin Y. Bliokh (*CEMS, RIKEN, JP*)

Field-Theory Revolution for Optics:

Revisiting Momentum and Angular Momentum of Light

12:10–14:00

Lunch break

Chair: Jeff Tollaksen

14:00–14:45

KEYNOTE LECTURE

Howard Wiseman (*Griffith University, Brisbane, AU*)

Ensembles of Bohmian trajectories: Real, Surreal, and Hyper-real

14:45–15:15

Basil Hiley (*University of London, UK*)

Weak Values, Local Momentum and Tangent Groupoids

15:15–15:35

Robert Flack (*University College London, UK*)

Measuring the weak value of atomic spin

15:35–15:50

Coffee break

Chair: Nicolas Gisin

15:50–16:20

Peter F. Barker (*University College London, UK*)

Weak measurements of atomic momentum in a matter-wave interferometer

16:20–16:40

Maurice de Gosson (*University of Vienna, AT*)

Weak values and the reconstruction problem in Born-Jordan quantization

16:40–17:00

Angelo Bassi (*Univ. Trieste and INFN, Trieste, IT*)

Models of spontaneous wave function collapse:
what they are, and how they can be tested

17:00–17:15

Coffee break

17:15–17:45

Helmut Rauch (*Atominstitut, TU Vienna, AT*)

Ignorance governs quantum experiments

17:45–18:05

Bill Poirier (*Texas Tech University, Lubbock, USA*)

Quantum Mechanics Without Wavefunctions: When quantum worlds collide

19:00–23:00

Gala Dinner

SUNDAY, OCTOBER 25th

EMERGENT SPACE-TIME, GRAVITY, AND THE MEASUREMENT PROBLEM

Chair: Lajos Diósi

9:00–9:45

KEYNOTE LECTURE

Gerard 't Hooft (*Spinoza Institute and Utrecht University, NL*)

How quantization of gravity leads to a discrete space-time

9:45–10:15

Bei-Lok Hu (*University of Maryland, College Park, USA*)

Gravitational Cat State

10:15–10:30

Coffee break

10:30–11:00

Aslav Brukner (*University of Vienna, AT*)

Quantum Clocks and Time

11:00–11:30

Silke Weinfurter (*University of Nottingham, UK*)

Hydrodynamic simulations of rotating and non-rotating black holes

11:30–11:50

Hans-Thomas Elze (*University of Pisa, IT*)

Quantum Features of Natural Cellular Automata

11:50–14:00

Lunch break

Chair: ?aslav Brukner

14:00–14:45

KEYNOTE LECTURE

Thanu Padmanabhan (*Pune University, IN*)

Atoms of Spacetime and the Nature of Gravity

14:45–15:05

Lajos Diósi (*Wigner Center for Physics Research, Budapest, HU*)

Nonlinear Schrödinger Equation in Foundations: Summary of 4 Catches

15:05–15:25

Lev Vaidman (*Tel Aviv University, IL*)

Ontology of the wave function

15:25–15:40

Coffee break

Chair: Hans-Thomas Elze

15:40–16:00

Hans De Raedt (*University of Groningen, NL*)

The unreasonable effectiveness of quantum theory:

a logical inference approach

16:00–16:20

Marian Kupczynski (*Université de Québec, CA*)

EPR Paradox, Quantum Nonlocality and Physical Reality

16:20–16:40

Theo Nieuwenhuizen (*Univ. of Amsterdam, NL*)

“Walking on quantum foundations”

16:40–17:00

Closing Ceremony