



FOUNDATIONAL QUESTIONS INSTITUTE

FQXi 2nd International Conference

Ponta Delgada, Azores, July 7-12, 2009

Conference Agenda

Please note this agenda is subject to change.

TUESDAY – JULY 7

- 18:00 – 19:00 WELCOME RECEPTION (Varanda do Atlântico)
The Varanda do Atlântico is located in the Açores Atlântico Hotel next door to the Hotel Marina Atlântico. Take a right out of the Marina Atlântico and enter the hotel next door. The Varanda is on the second floor up the stairs or via elevator.
- 19:00 – 22:00 OPENING BANQUET (Varanda do Atlântico)
19:00 – 19:15 **M. Tegmark** and **A. Aguirre**: Welcome Remarks
20:00 – 21:00 **P. Byrne**: The many worlds of Hugh Everett III

WEDNESDAY – JULY 8

- 7:00 Breakfast buffet open
- 9:00 – 9:20 CONFERENCE INTRODUCTION (Sala Atlântico)
Unless otherwise noted, all meetings in the hotel will take place in the Sala Atlântico conference room on the ground floor.
- 9:30 – 10:05 **P. Davies**: Teleology without teleology
10:05 – 10:40 **A. Guth**: Thorny problems in cosmology
- 10:40 – 11:00 BREAK
- 11:00 – 11:35 **Y. Aharanov**: A new approach to quantum mechanics
11:35 – 12:10 **J. Uffink**: Entanglement entropy and utility
- 12:10 – 14:00 LUNCH (Sala Iola)
- 14:00 – 14:35 **F. Wilczek**: Particle Physics
14:35 – 15:10 **S. Aaronson**: How much information is in a quantum state?

15:10 – 15:30	BREAK
15:30 – 16:05	F. Markopoulou: Quantum gravity
16:05 – 16:40	J. Barbour: The minimal geometrical ontology for a fundamental theory
16:40 – 17:30	DISCUSSION OF SMALL GROUP ASSIGNMENTS
19:00	GROUP DINNER at Solar da Graça (walking distance) <i>Solar da Graça, located at Rua do Mercado 46, is about 3 short blocks from the hotel. Please meet in the hotel lobby at 19:00 to walk over together. The walk is on cobblestone streets, so please walk carefully and wear flats.</i>

THURSDAY – JULY 9

7:00	Breakfast buffet open
8:30 – 17:30	PARALLEL EXCURSIONS: Golf Outing; Sete Cidades Tour; Furnas Tour <i>Please meet in the lobby by 8:20 for all tours.</i> All excursions are designed to enable scientific discussions and informal presentations in a relaxed and interesting atmosphere. During these sessions, small groups will brainstorm and discuss questions and issues raised during Wednesday's session.
18:00 – 19:00	LOCAL WINE TASTING AND INFORMAL GROUP DISCUSSION <i>Please meet in Mezzanine for the wine tasting and discussion.</i> DINNER ON YOUR OWN

FRIDAY – JULY 10

7:00	Breakfast buffet open
9:15	MORNING SESSION STARTS (Sala Atlântico) <i>Unless otherwise noted, all meetings in the hotel will take place in the Sala Atlântico conference room on the ground floor.</i>
9:15 – 10:05	GROUP DISCUSSION REPORTS
TIME AND QUANTUM GRAVITY	
10:05 – 10:15	C. Kiefer: Does time exist in quantum gravity?
10:15 – 10:25	R. Gambini: The issue of time in totally constrained systems and quantum gravity
10:25 – 10:35	E. Minguzzi: Time and causality in general relativity
10:35 – 10:45	A. Albrecht: Challenges for a quantum theory of the universe: The clock ambiguity and the Born rule crisis
10:45 – 11:00	BREAK

COSMOLOGY

11:00 – 11:10	F. Adams: Stars in other universes
11:10 – 11:20	L. Mersini-Houghton: An aether of time
11:20 – 11:30	A. Aguirre: Is the Universe Infinite?
11:30 – 11:40	O. Dreyer: Internal relativity and early universe cosmology
11:40 – 11:50	M. Bojowald: Quantum gravity and the beginning of the universe
11:50 – 12:00	S. Gratton: Path integral for volume-weighted eternal inflation
12:00 – 12:10	E. Guendelman: Developments in wormhole theory, child universe theory and their implications for cosmology and quantum gravity
12:10 – 12:20	P. Moniz: ‘Observational’ supersymmetric quantum cosmology
12:20 – 14:00	LUNCH (Sala Iola)

QUANTUM GRAVITY I

14:00 – 14:10	S. Alexander: Quantum gravity as a Fermi liquid theory
14:10 – 14:20	G. Starkman: In praise of the inverse square law
14:20 – 14:30	M. Parikh: The mysterious thermodynamic origin of classical gravity
14:30 – 14:40	S. Weinstein: Gauge potentials and gravitation
14:40 – 14:50	X. Wen: Tensor network approach to emergence of gauge theory
14:50 – 15:00	T. Dray: Octonions and Fermions
15:00 – 15:10	A.G. Lisi: The geometric structure of the standard model and gravity
15:10 – 15:20	D. Oriti: Group field theories - Microscopic discrete models of quantum spacetime
15:20 – 15:30	F. Girelli: Are there any relationships between non-commutative geometry and (loop/spinfoam) quantum gravity?
15:30 – 15:45	BREAK

QUANTUM GRAVITY II

15:45 – 15:55	B. Carr: Interlinking black holes, quantum theory, time and many worlds
15:55 – 16:05	T.P. Singh: Quantum measurement and quantum gravity: many worlds or collapse of the wave-function?
16:05 – 16:15	S. Hossenfelder: Phenomenological quantum gravity
16:15 – 16:25	D. Budker: Table-top experimental tests of fundamental symmetries of nature
16:25 – 16:35	M. Kozlov: Atomic and molecular spectra as probes for fundamental constants
16:35 – 16:45	D. Rickles: The methodology of string theory
16:45 – 17:30	DISCUSSION OF NEW SMALL GROUP ASSIGNMENTS
19:00	Bus to GROUP DINNER at Ver de Mar

Please meet in the lobby by 19:00 to board the bus for dinner. Ver de Mar is located in the city of São Vicente Ferreira.

SATURDAY – JULY 11

7:00	Breakfast buffet open on ground floor
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8:30 – 17:30

PARALLEL EXCURSIONS to Ribeira Quente Beach: Whale and Dolphin Watching Boat Tour; Jeep Tour

Jeep tour - later departure: Please meet in the lobby by 8:40 to board the jeeps.

Boat tour - please meet in the Marina across from the hotel at the SeaWatch kiosk at 8:30. (Please aim to leave the hotel by 8:20 to make it in time.)

**If you're traveling by boat, but want to load your bag of swimgear in the jeeps, please be in the lobby by 8:15am to do so.*

During these excursions, small groups will brainstorm and discuss questions and issues raised on Friday's session.

13:30 (Approx.)

TALKS ON THE BEACH

J. Harrison: Operator calculus and atomistic mechanics

L. Crane: Black hole power sources

T. Vachaspati: Cosmology and particle physics

DINNER ON YOUR OWN

SUNDAY – JULY 12

7:00

Breakfast buffet open on ground floor

9:15

MORNING SESSION STARTS (Sala Atlântico)

Unless otherwise noted, all meetings in the hotel will take place in the Sala Atlântico conference room on the ground floor.

9:15 – 10:45

GROUP DISCUSSION REPORTS

10:45 – 11:00

BREAK

QUANTUM MECHANICS

11:00 – 11:10

B. Coecke: The logic of non-local quantum spacetime

11:10 – 11:20

D. Browne: Bell inequalities and computational correlations

11:20 – 11:30

H. Barnum: Information processing protocols and primitives and the structure of physical theories

11:30 – 11:40

C. Brukner: Theories of systems with limited information content - Quantum theory and beyond

11:40 – 11:50

J. Christian: Disproof of Bell's theorem

11:50 – 12:00

M. Tegmark: What do the dimensionless constants tell us?

12:00 – 12:10

A. Botero: When is it appropriate to describe a quantum mechanical system using a point in phase space?

12:10 – 12:20

J. Tollaksen: A new approach to quantum mechanics

12:20 – 13:30

LUNCH (Sala Iola)

13:30 – 14:30

CLOSING SESSION