FRONTIERS OF QUANTUM INFORMATION SCIENCE


General Director: David Gross (KITP and UCSB)
Director: John Preskill (Caltech)
Codirectors: Michael Ben-Or (The Hebrew University)
Patrick Hayden (Stanford University)

PROGRAM

The lectures will take place at the IIAS lecture hall, Feldman building 1st floor, The Hebrew University, Edmond J. Safra Campus, Givat Ram, Jerusalem

**Monday, December 30**

09:00-09:30 REGISTRATION AT IIAS LOBBY

09:30-09:40 GREETINGS: Michal Linial (IIAS Director)

09:40-11:00 Scott Aaronson (MIT)
*Quantum Complexity and Quantum Optics I*

11:00-11:30 Coffee break

11:30-13:00 Renato Renner (ETH)
*Quantum Foundations and Thermodynamics I*

13:00-14:30 Lunch
14:30-16:00  Stephen Jordan (NIST)  
Quantum Algorithms I

16:00-16:30  Coffee break

16:30-18:00  Michal Horodecki (Gdansk University)  
Quantum Information and Thermodynamics I

Tuesday, December 31

09:00-10:30  Scott Aaronson (MIT)  
Quantum Complexity and Quantum Optics II

10:30-11:00  Coffee break

11:00-12:30  Renato Renner (ETH)  
Quantum Foundations and Thermodynamics II

12:30-14:30  Lunch

14:30-16:00  Stephen Jordan (NIST)  
Quantum Algorithms II

16:00-16:30  Coffee break

16:30-18:00  Michal Horodecki (Gdansk University)  
Quantum Information and Thermodynamics II

20:00  NEW YEAR’S EVE PARTY at Beit Belgia

Wednesday, January 1

09:00-10:30  David DiVicenzo (Aachen University)  
Quantum Computing with Superconducting Circuits I

10:30-11:00  Coffee break

11:00-12:30  Barbara Terhal (Aachen University)  
Quantum Error Correction I

12:30-14:30  Lunch

14:30-16:00  Renato Renner (ETH)  
Quantum Foundations and Thermodynamics III

16:00-16:30  Coffee break

16:30-18:00  Scott Aaronson (MIT)  
Quantum Complexity and Quantum Optics III
### Thursday, January 2

09:00-10:30   **David DiVicenzo** (Aachen University)  
*Quantum Computing with Superconducting Circuits II*

10:30-11:00   Coffee break

11:00-12:30   **Barbara Terhal** (Aachen University)  
*Quantum Error Correction II*

12:30-14:30   Lunch

14:30-16:00   **Renato Renner** (ETH)  
*Quantum Foundations and Thermodynamics IV*

16:00-16:30   Coffee break

16:30-18:00   **Scott Aaronson** (MIT)  
*Quantum Complexity and Quantum Optics IV*

### Friday, January 3

09:00-10:30   **David DiVicenzo** (Aachen University)  
*Quantum Computing with Superconducting Circuits III*

10:30-11:00   Coffee break

11:00-12:30   **Barbara Terhal** (Aachen University)  
*Quantum Error Correction III*

12:30-14:00   Lunch

### Saturday, January 4

08:30-17:00   Excursion to the Dead Sea and Masada

### Sunday, January 5

09:00-10:30   **Stephen Jordan** (NIST)  
*Quantum Algorithms III*

10:30-11:00   Coffee break

11:00-12:30   **Michal Horodecki** (Gdansk University)  
*Quantum Information and Thermodynamics III*
12:30-14:30 Lunch

14:30-16:00 Rob Myers (Perimeter Institute)
Entanglement in Quantum Field Theory I

16:00-16:30 Coffee break

16:30-18:00 Frank Verstraete (University of Vienna)
Quantum Information and Quantum Matter I

**Monday, January 6**

09:00-10:30 Daniel Harlow (Princeton University)
Black Holes and Quantum Information I

10:30-10:45 Coffee break

10:45-12:15 Michal Horodecki (Gdansk University)
Quantum Information and Thermodynamics IV

12:15-13:30 Lunch

13:30-17:00 TOUR OF THE OLD CITY OF JERUSALEM

**Tuesday, January 7**

09:00-10:30 Daniel Harlow (Princeton University)
Black Holes and Quantum Information II

10:30-11:00 Coffee break

11:00-12:30 Ady Stern (Weizmann Institute)
Topological Quantum Computing I

12:30-14:30 Lunch

14:30-16:00 Rob Myers (Perimeter Institute)
Entanglement in Quantum Field Theory II

16:00-16:30 Coffee break

16:30-18:00 Frank Verstraete (University of Vienna)
Quantum Information and Quantum Matter II
**Wednesday, January 8**

09:00-10:30  **Daniel Harlow** (Princeton University)  
*Black Holes and Quantum Information III*

10:30-11:00  Coffee break

11:00-12:30  **Ady Stern** (Weizmann Institute)  
*Topological Quantum Computing II*

12:30-14:30  Lunch

14:30-16:00  **Rob Myers** (Perimeter Institute)  
*Entanglement in Quantum Field Theory III*

16:00-16:30  Coffee break

16:30-18:00  **Frank Verstraete** (University of Vienna)  
*Quantum Information and Quantum Matter III*

18:00  END OF SCHOOL PARTY

**Thursday, January 9**

09:00-10:30  **Daniel Harlow** (Princeton University)  
*Black Holes and Quantum Information IV*

10:30-11:00  Coffee break

11:00-12:30  **Ady Stern** (Weizmann Institute)  
*Topological Quantum Computing III*

12:30-14:30  Lunch

14:30-16:00  **Rob Myers** (Perimeter Institute)  
*Entanglement in Quantum Field Theory IV*

16:00-16:30  Coffee break

16:30-18:00  **Frank Verstraete** (University of Vienna)  
*Quantum Information and Quantum Matter IV*