

**The 38th Advanced School
in Theoretical Physics**

**QFT/String Theory in the
Times of COVID-19**

27 December 2022 - 5 January 2023

General Director:

David Gross (UCSB, KITP)

Co-Director:

Eliezer Rabinovici (The Hebrew University of Jerusalem)

Local Organizing Committee:

Shmuel Elitzur (The Hebrew University of Jerusalem)

Amit Giveon (The Hebrew University of Jerusalem)

Michael Smolkin (The Hebrew University of Jerusalem)

Israel Institute for Advanced Studies
Edmond J. Safra Campus, Givat Ram
The Hebrew University of Jerusalem

Tuesday, 27 December

9:00-10:00 Registration

10:00-10:05 Greetings by **Yitzhak Hen**, Director of the IIAS, and **Eliezer Rabinovici**,
Director of the School

10:05-10:30 Introduction by **David Gross**

10:30-12:00 Nathan Seiberg (IAS Princeton): Symmetries

12:00-13:00 *Lunch break - IIAS Lobby*

13:00-14:30 Ahmed Almheiri (IAS Princeton): The Black Hole Information Paradox

14:30-15:00 *Coffee break*

15:00-16:30 Zohar Komargodski (Simons Center for Geometry and Physics):
Defects in Quantum Field Theory: from Topological to Dynamical
Aspects

16:30-17:00 *Coffee break*

17:00-18:30 Nikita Nekrasov (Simons Center for Geometry and Physics)

18:30-19:30 Reception in the IIAS lobby

Wednesday, 28 December

9:30-11:00 Zohar Komargodski: Defects in Quantum Field Theory: from
Topological to Dynamical Aspects

11:00-11:30 *Coffee break*

11:30-13:00 Nathan Seiberg

13:00-14:00 *Lunch break - Sherman*

14:00-15:30 Ahmed Almheiri: The Black Hole Information Paradox

15:30-16:00 *Coffee break*

16:00-17:30 Nikita Nekrasov

17:30 Tutorial

Thursday, 29 December

9:30-11:00 Daniel Jafferis (Harvard University): Matrix model for eigenstate thermalization

11:00-11:30 *Coffee break*

11:30-13:00 Zohar Komargodski: Defects in Quantum Field Theory: from Topological to Dynamical Aspects

13:00-14:00 *Lunch break - Sherman*

14:00-15:30 Nathan Seiberg

15:30-16:00 *Coffee break*

16:00-17:30 Ahmed Almheiri: The Black Hole Information Paradox

17:30 Tutorial

Friday, 30 December

9:30-11:30 Ahmed Almheiri: DSSYK & emergence of a bulk χ

11:30-12:00 *Light brunch - IIAS lobby*

12:00-15:00 Old City tour (transportation back to the Prima Park Hotel)

Saturday, 31 December

7:30-17:00 Trip to the Dead Sea and Masada

Sunday, 1 January

10:30-12:00 Rajesh Gopakumar (ICTS Bengaluru): Deriving Gauge-String Duality

12:00-13:00 *Lunch break - Sherman*

13:00-14:30 Nathan Seiberg

14:30-15:00 *Coffee break*

15:00-16:30 Daniel Jafferis: Matrix model for JT gravity + matter

16:30-17:00 *Coffee break*

17:00-18:30 Zohar Komargodski: Defects in Quantum Field Theory: from
Topological to Dynamical Aspects

18:30 Tutorial

Monday, 2 January

8:30-10:00 Netta Engelhardt (MIT): Reconstruction & Complexity in AdS/CFT

10:00-10:15 *Coffee break*

10:15-11:45 Rajesh Gopakumar: Deriving Gauge-String Duality

12:00-13:00 Nathan Seiberg (at the Racah Institute of Physics)

13:15-15:30 *Lunch break - Sherman*

15:30-17:00 Sergei Dubovsky (New York University): QCD strings

17:00 Tutorial

Tuesday, 3 January

9:30-11:00 Sergei Dubovsky: QCD strings

11:00-11:30 *Coffee break*

11:30-13:00 Rajesh Gopakumar: Deriving Gauge-String Duality

13:00-14:00 *Lunch break - Sherman*

14:00-15:30 Netta Engelhardt

15:30-16:00 *Coffee break*

16:00-17:30 Daniel Jafferis: Lorentzian versus Euclidean gravity

17:30 Tutorial

Wednesday, 4 January

9:30-11:00 Netta Engelhardt

11:00-11:30 *Coffee break*

11:30-13:00 Rajesh Gopakumar: Deriving Gauge-String Duality

13:00-14:00 *Lunch break - IIAS lobby*

14:00-15:30 Sergei Dubovsky: QCD strings

15:35-16:20 Visit to Einstein Archives (Group 1)

16:20-17:05 Visit to Einstein Archives (Group 2)

17:05-17:20 *Coffee break*

17:20-18:20 Tutorial

18:30 Transportation from the IIAS to the participants dinner

19:00 Participants dinner at *Ima* (55 Ha-Rav Shmuel Barukh Street, Jerusalem)

Thursday, 5 January

09:30-11:00 Daniel Jafferis: Quantum gravity from the inside

11:00-11:30 *Coffee break*

11:30-12:30 Eliezer Rabinovici: View from the CERN Council

12:30-13:45 *Lunch break - IIAS lobby*

13:45-15:15 Micha Berkooz (Weizmann Institute of Science): Double scaled SYK:
RMT and spacetime aspects

15:15-15:30 *Coffee break*

15:30-17:00 Sergei Dubovsky: QCD strings

17:00 Tutorial