



THE HEBREW UNIVERSITY OF JERUSALEM
ISRAEL INSTITUTE FOR ADVANCED STUDIES

Quantum Field Theory, String Theory and Beyond

28 February - 3 March, 2016

All lectures will take place at the Israel Institute for Advanced Studies,
on the Edmond J. Safra, Givat Ram Campus

Organizers:

Ofer Aharony (Weizmann Institute of Science)
Eliezer Rabinovici (The Hebrew University of Jerusalem)

Scientific Committee:

Shmuel Elitzur (The Hebrew University of Jerusalem)
Amit Giveon (The Hebrew University of Jerusalem)
Nissan Itzhaki (Tel Aviv)
Zohar Komargodski (Weizmann Institute of Science)
Moshe Moshe (Technion, Israel Institute of Technology)
Shimon Yankielowicz (Tel Aviv)

Program

Sunday, 28 February

08:30 - 09:30	Registration
09:30 - 09:40	Welcome - Michal Linial (director of IIAS)
09:40 - 10:20	Curtis Callan (Princeton University) The statistics of diversity in the immune system: of mice and men, T-cells and B-cells
10:20 - 11:00	Andrew Strominger (Harvard University) Infrared structure of Abelian gauge theory
11:00 - 11:30	Coffee Break
11:30 - 12:10	Lars Brink (Chalmers University of Technology) Exceptional Symmetries vs. Spacetime Symmetries
12:10 - 12:50	Alexander Polyakov (Princeton University) Impossible Hyperbolae
13:00 - 14:30	Lunch
14:30 - 15:10	Lars Bildsten (Kavli Institute For Theoretical Physics (KITP)) Hearing the Stars: New Insights into Stellar Interiors from Astroseismology
15:10 - 15:50	Hiroshi Ooguri (Caltech) Characterizing the Swampland
15:50 - 16:30	John Iliopoulos (LPTENS) SU(N) gauge theories and non-commutative geometry
16:30 - 17:00	Coffee Break

- 17:00 - 17:40 **Gary Horowitz** (University of California at Santa Barbara)
New Insights into Quantum Gravity from Holography
- 17:40 - 18:20 **Spenta Wadia** (TATA Institute of Fundamental Research, Mumbai)
The S-matrix in Chern-Simons + matter theories
- 19:00 - 21:30 **Dinner at "Modern" restaurant at the Israel Museum**
Including a welcome by Hebrew University president Menachem Ben Sasson

Monday, 29 February

- 09:30 - 10:10 **Erik Verlinde** (University of Amsterdam)
Emergent Gravity and the Dark Universe
- 10:10 - 10:50 **Edouard Brezin** (LPTENS)
45 years after
- 10:50 - 11:20 Coffee Break
- 11:20 - 12:00 **Igor Klebanov** (Princeton University)
The Gross-Neveu Model Above Two Dimensions
- 12:00 - 12:40 **Marc Henneaux** (Université Libre de Bruxelles)
Hyperbolic Coxeter groups and Hidden Symmetries of Gravity
- 12:40 - 14:10 Lunch
- 14:10 - 14:50 **Nathan Seiberg** (Institute for Advanced Study, Princeton)
Gapped Boundary Phases of Topological Insulators via Weak Coupling

- 14:50 - 15:30 **Tom Banks** (University of California, Santa Cruz)
From Asymptotic Darkness to Holographic Space Time
- 15:30 - 16:00 Coffee Break
- 16:00 - 16:40 **Francois Englert** (Université Libre de Bruxelles)
On the quantum fate of horizons and the fuzzball hypothesis
- 16:40 - 17:20 **Eliezer Rabinovici** (The Hebrew University of Jerusalem)
TBA
- 17:20 - 18:00 Summary of David Gross Fest

Tuesday, 1 March

- 09:30 - 10:10 **Sean Hartnoll** (Stanford University)
Hydrodynamic theory of phase-fluctuating superconductivity: from vortices to Chern-Simons interactions
- 10:10 - 10:50 **Daniel Jafferis** (Harvard University)
TBA
- 10:50 - 11:20 Coffee Break
- 11:20 - 12:00 **Eva Silverstein** (Stanford University)
TBA
- 12:00 - 12:40 **Mikhail Shifman**
Ten-dimensional critical string as a soliton in four-dimensional super-Yang-Mills theory
- 12:40 - 14:00 **Light**
Lunch
- 14:00 - 18:00 Tour

18:00 - 20:00 Dinner

Wednesday, 2 March

- 09:15 - 09:55 **Shiraz Minwalla** (TATA Institute of Fundamental Research, Mumbai)
A Charged Membrane Paradigm at large D
- 09:55 - 10:35 **Laurence Yaffe** (University of Washington)
Lessons from Numerical Holography
- 11:00 - 12:30 **Andrew Strominger** (Harvard University)
Bekenstein Memorial Lecture at faculty of physics
- Black Hole Information Revisited
- 12:30 - 14:00 Lunch
- 14:00 - 15:30 **Nima Arkani-Hamed** (IAS Princeton)
Review: “The Future of Particle Physics”
- 15:30 - 16:00 Coffee Break
- 16:00 - 16:40 **Kyriakos Papadodimas** (CERN, Geneva)
TBA
- 16:40 - 17:20 **Daniel Harlow** (Harvard University)
Wormholes, Emergent Gauge Fields, and the Weak Gravity Conjecture

Thursday, 3 March

- 09:30 - 10:10 **Zohar Komargodski** (Weizmann Institute of Science)
Trace Anomalies and the Correlation Functions of Coulomb Branch Operators
- 10:10 - 10:50 **Nadav Drukker** (King's College London)
The superconformal index of N=4 SYM, exact results from a Fermi gas

10:50 - 11:20	Coffee Break
11:20 - 12:00	Rajesh Gopakumar (International Centre for Theoretical Sciences) String Theory as a Higher Spin Theory
12:00 - 12:40	Dieter Lust (LMU and MPI, Munich) Classical and quantum black hole hair
12:40 - 14:10	Lunch
14:10 - 15:40	Leonardo Rastelli (Yang Institute for Theoretical Physics, Stony Brook University) Review : Conformal Bootstrap
15:40 - 16:10	Coffee Break
16:10 - 16:50	Nikita A. Nekrasov (Simons Center for Geometry and Physics, Stony Brook University) Sewn gauge theories
16:50 - 17:30	Jeffrey Harvey (University of Chicago) What is moonshine trying to tell us?