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