



**VICTOR ROTHSCHILD MEMORIAL SYMPOSIA
THE HEBREW UNIVERSITY OF JERUSALEM**

The Institute for Advanced Studies

The 29th Jerusalem Winter School in Theoretical Physics

With the Support of the European Science Foundation

**CURRENT TRENDS IN PARTICLE PHYSICS
AND COSMOLOGY**

December 27, 2011 - January 5, 2012

**General Director: David Gross (KITP and UCSB)
Director: Eliezer Rabinovici (The Hebrew University)**

PROGRAM

Tuesday, December 27

09:00-10:00	<i>Registration</i>
10:00-11:30	David Gross (KITP and UCSB)
11:30-12:00	<i>Coffee break</i>
12:00-13:30	Zvi Bern (UCLA) <i>Harmony of Scattering Amplitudes: From QCD to Gravity I</i>
13:30-14:30	<i>Lunch</i>

- 14:30-16:00 **Michael Dine** (UCSC)
Supersymmetry: Bottom Up and Top Down I
- 16:00-16:30 *Coffee break*
- 16:30-18:00 **Nikita Nekrasov** (IHES and Stony Brook)
Geometry and Physics of $N=2$ $d+4$ Theories I
- 18:00 *Reception*

Wednesday, December 28

- 09:00-10:30 **Michael Dine** (UCSC)
Supersymmetry: Bottom Up and Top Down II
- 10:30-11:00 *Coffee break*
- 11:00-12:30 **Zvi Bern** (UCLA)
Harmony of Scattering Amplitudes: From QCD to Gravity II
- 12:30-14:00 *Lunch*
- 14:00-15:30 **Viatcheslav Mukhanov** (University of München)
From Quantum Fluctuations to Observable Universe I
- 15:30-16:00 *Coffee break*
- 16:00-17:30 **Nikita Nekrasov** (IHES and Stony Brook)
Geometry and Physics of $N=2$ $d+4$ Theories II
- 17:30-18:30 **Tutorial**

Thursday, December 29

- 09:00-10:30 **Erik Verlinde** (Amsterdam University)
Emergent Gravity I
- 10:30-11:00 *Coffee break*
- 11:00-12:30 **Michael Dine** (UCSC)
Supersymmetry: Bottom Up and Top Down III
- 12:30-14:00 *Lunch*
- 14:00-15:30 **Nikita Nekrasov** (IHES and Stony Brook)
Geometry and Physics of $N=2$ $d+4$ Theories III
- 15:30-16:00 *Coffee break*

16:00-17:30 **Maria Spiropulu** (CERN and Caltech)
LHC Results I

17:30-18:30 **Tutorial**

Friday, December 30

09:00-10:30 **Erik Verlinde** (Amsterdam University)
Emergent Gravity II

10:30-11:00 *Coffee break*

11:00-12:30 **Maria Spiropulu** (CERN and Caltech)
LHC Results II

12:30-14:00 *Lunch*

Saturday, December 31

08:00-17:00 **Tour to Masada and Ein Gedi**

21:00 *New Year's party*

Sunday, January 1

10:00-11:30 **Erik Verlinde** (Amsterdam University)
Emergent Gravity III

11:30-12:00 *Coffee break*

12:00-13:30 **Zvi Bern** (UCLA)
Harmony of Scattering Amplitudes: From QCD to Gravity III

13:30-14:30 *Lunch*

14:30-16:00 **Viatcheslav Mukhanov** (University of München)
From Quantum Fluctuations to Observable Universe II

16:00-16:30 *Coffee break*

16:30-18:00 **Nima Arkani Hamed** (IAS Princeton)

18:00-19:00 **Tutorial**

Monday, January 2

- 09:00-10:30 **Michael Dine** (UCSC)
Supersymmetry: Bottom Up and Top Down IV
- 10:30-11:00 *Coffee break*
- 11:00-11:45 **Maria Spiropulu** (CERN and Caltech)
LHC Results III
- 12:15-13:15 **Colloquium**
Erik Verlinde (Amsterdam University)
Dark Matter, Dark Energy and the Emergence of Gravity
- 13:15-14:15 *Lunch*
- 14:30-18:30 **Tour to the Old City of Jerusalem**

Tuesday, January 3

- 09:00-10:30 **Viatcheslav Mukhanov** (University of München)
From Quantum Fluctuations to Observable Universe III
- 10:30-11:00 *Coffee break*
- 11:00-12:30 **Zohar Komargodski** (IAS Princeton and Weizmann Institute)
Non-Perturbative Aspects of Quantum Field Theory in Diverse Dimensions I
- 12:30-14:00 *Lunch*
- 14:00-15:30 **Nima Arkani Hamed** (IAS Princeton)
- 15:30-16:00 *Coffee break*
- 16:00-17:30 **Viatcheslav Mukhanov** (University of München)
From Quantum Fluctuations to Observable Universe IV
- 18:00-19:00 **Tutorial** at IAS building (Eilat Hall, 3rd floor)

Wednesday, January 4

- 09:00-10:30 **Nima Arkani Hamed** (IAS Princeton)
- 10:30-11:00 *Coffee break*
- 11:00-12:30 **Zvi Bern** (UCLA)

Harmony of Scattering Amplitudes: From QCD to Gravity IV

- 12:30-14:00 *Lunch*
- 14:00-15:30 **Zohar Komargodski** (IAS Princeton and Weizmann Institute)
Non-Perturbative Aspects of Quantum Field Theory in Diverse Dimensions II
- 15:30-16:00 *Coffee break*
- 16:00-17:30 **Eliezer Rabinovici** (The Hebrew University)
On Crunches in AdS and Cosmological Complementarity
- 18:00-19:00 **Tutorial** at IAS building (Eilat Hall, 3rd floor)

Thursday, January 5

- 09:00-10:30 **Zohar Komargodski** (IAS Princeton and Weizmann Institute)
Non-Perturbative Aspects of Quantum Field Theory in Diverse Dimensions III
- 10:30-11:00 *Coffee break*
- 11:00-12:30 **Eilam Gross** (The Weizmann Institute)
Hunting the Higgs Particle
- 12:30-14:00 *Lunch*
- 14:00-15:30 **Zohar Komargodski** (IAS Princeton and Weizmann Institute)
Non-Perturbative Aspects of Quantum Field Theory in Diverse Dimensions IV
- 15:30-16:00 *Coffee break*
- 16:00-17:30 **Nima Arkani Hamed** (IAS Princeton)
- 18:00-19:00 **Tutorial** at IAS building (Eilat Hall, 3rd floor)

**All lectures will take place at the Maison de France
at The Hebrew University, Edmond J. Safra Campus, Givat Ram,
Jerusalem**