

**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 at La Maison de France lobby</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 **Eilam Gross** (The Weizmann Institute)
Hunting the Higgs Particle
- 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 at IAS lobby*

Wednesday, December 28

- 09:00-10:30 **Michael Dine** (UCSC)
Supersymmetry: Bottom Up and Top Down I
- 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 II
- 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**

18:30-19:30 **Poster Session** (*in the IAS lobby*)

Friday, December 30

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

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*

Saturday, December 31

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

21:00 *New Year's party at the Terasa Restaurant (Menachem Begin Heritage Center)*

Sunday, January 1 (updated)

11:00-12:30 **Erik Verlinde** (Amsterdam University)
Emergent Gravity III

13:00-14:00 *Lunch*

14:00-15:30 **Michael Dine** (UCSC)
Supersymmetry: Bottom Up and Top Down IV

15:30-16:00 *Coffee break*

16:00-17:30 **Viatcheslav Mukhanov** (University of München)
From Quantum Fluctuations to Observable Universe II

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

Monday, January 2

- 09:00-10:30 **Zvi Bern** (UCLA)
Harmony of Scattering Amplitudes: From QCD to Gravity III
- 10:30-11:00 *Coffee break*
- 11:00-11:45 **Maria Spiropulu** (CERN and Caltech)
LHC Results II
- 12:15-13:15 **Colloquium (at the Racah Institute of Physics,
Levin Building, Hall #8)**
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)
Scattering Amplitudes and the Positive Grassmannian I
- 15:30-16:00 *Coffee break*
- 16:00-17:30 **Viatcheslav Mukhanov** (University of München)
From Quantum Fluctuations to Observable Universe IV
- 17:30-18:30 **Tutorial**

Wednesday, January 4

- 09:00-10:30 **Nima Arkani Hamed** (IAS Princeton)
Scattering Amplitudes and the Positive Grassmannian II
- 10:30-11:00 *Coffee break*

11:00-12:30	Zvi Bern (UCLA) <i>Harmony of Scattering Amplitudes: From QCD to Gravity IV</i>
12:30-14:00	<i>Lunch</i>
14:00-15:30	Zohar Komargodski (IAS Princeton and Weizmann Institute) <i>Non-Perturbative Aspects of Quantum Field Theory in Diverse Dimensions II</i>
15:30-16:00	<i>Coffee break</i>
16:00-17:30	Eliezer Rabinovici (The Hebrew University) <i>On Crunches in AdS and Cosmological Complementarity</i>
17:30-18:30	Tutorial

Thursday, January 5 (updated)

09:00-10:30	Zohar Komargodski (IAS Princeton and Weizmann Institute) <i>Non-Perturbative Aspects of Quantum Field Theory in Diverse Dimensions III</i>
10:30-11:00	<i>Coffee break</i>
11:00-12:30	Zohar Komargodski (IAS Princeton and Weizmann Institute) <i>Non-Perturbative Aspects of Quantum Field Theory in Diverse Dimensions IV</i>
12:30-14:00	<i>Lunch</i>
14:00-15:30	Nima Arkani Hamed (IAS Princeton) <i>Scattering Amplitudes and the Positive Grassmannian III</i>
15:30-16:00	<i>Coffee break</i>
16:00-17:30	Nima Arkani Hamed (IAS Princeton) <i>Implications of a 125 GeV Higgs</i>
17:30-18:30	Tutorial

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