



The Abdus Salam
**International Centre
for Theoretical Physics**



Workshop on Physical Virology

Organizer(s): F. Livolant, V. Lorman, C Micheletti, R. Podgornik. Local Organiser: M. Marsili
Trieste - Italy, 24 - 28 September 2012

Preliminary Programme

MONDAY, 24 SEPTEMBER 2012

24 September 2012

- 08:30 - 09:30** **REGISTRATION & ADMINISTRATIVE FORMALITIES To be held at the Adriatico Guest House - lower level 1**
PLEASE NOTE: Participants receiving MEAL COUPONS may collect the total amount of coupons for the duration of your stay ONE DAY AFTER you have completed the ONLINE REGISTRATION with the Secretary of the activity. The MEAL COUPONS MUST BE COLLECTED DIRECTLY from the GUEST HOUSE RECEPTIONS DESKS AS FOLLOWS: ADRIATICO GUEST HOUSE: Tuesday to Friday from 13.00 to 15.00 GALILEO GUEST HOUSE: Tuesday to Friday from 10.00 to 12.00 and 13.00 to 15.00
- 09:30 - 09:45** **OPENING and WELCOME**
- 09:45 - 10:35** **William GELBART / University of California, U.S.A.**
In Vitro Reconstitutions of Simple RNA Viruses and Virus-Like Particles
- 10:35 - 11:10** --- Coffee Break ---
- 11:10 - 12:00** **Martin CASTELNOVO / ENS. Lyon, FRANCE**
RNA Control of HIV-1 Size Polydispersity
- 12:00 - 14:00** --- Lunch Break ---
- 14:00 - 14:50** **Peter STOCKLEY / University of Leeds, U.K.**
The Multiple Roles of Genomic RNA in Small ssRNA Virions
- 14:50 - 15:40** **Reidun TWAROCK / University of York, U.K.**
A Hamiltonian Paths Approach to RNA Virus Assembly with Implications for Viral Evolution

- 15:40 - 16:10 --- Coffee Break ---
- 16:10 - 17:00 **Mauro GIACCA / ICGEB, Trieste, Italy**
Regulation of HIV-1 DNA Integration and Transcription by Nuclear Topography
- 17:00 - 17:50 **Nicole STEINMETZ / Case Western Reserve University School of Medicine, Cleveland, U.S.A.**
A Molecular Farming Approach to Nanomedicine

TUESDAY, 25 SEPTEMBER 2012

25 September 2012

- 09:00 - 09:50 **Ernesto Di MAURO / Universita' La Sapienza, Rome, ITALY**
On the Origin of Pre-Genetic Information
- 09:50 - 10:40 **Alex EVILEITCH / Carnegie Mellon University, Pittsburgh, U.S.A.**
Physical Chemistry of Viral Evolution
- 10:40 - 11:10 --- Coffee Break ---
- 11:10 - 12:00 **Michael LASSIG / University of Cologne, Germany**
Protein Evolution in the Human Influenza Virus
- 12:00 - 14:00 --- Lunch Break ---
- 14:00 - 14:50 **Silvio FRANZ / Universite XI Paris-Sud, Orsay, FRANCE**
Modeling Microevolution in a Changing Environment: The Evolving Quasispecies and the Diluted Champion Process
- 14:50 - 15:40 **Roya ZANDI / University of California at Riverside, U.S.A.**
Self-assembly of Spherical, Cylindrical and Conical Capsids: The Role of Genome
- 15:40 - 16:10 **Marek CIEPLAK / Polish Academy of Sciences, Warsaw, Poland**
Nanoindentation of 35 virus capsids in a molecular model
- 16:10 - 16:40 --- Coffee Break ---
- 16:40 - 18:30 **POSTER SESSION**
- 19:00 - 22:00 --- RECEPTION ---

WEDNESDAY, 26 SEPTEMBER 2012

26 September 2012

- 09:00 - 09:50 **Adrian PARSEGHIAN / University of Massachusetts, Amherst, U.S.A.**
DNA Packing Pressure, in the Test Tube and in the Virus
- 09:50 - 10:40 **Antoinio SIBER / Institute of Physics, Zagreb, Croatia**
Importance of Electrostatic Interactions for Virus Assembly and Structure
- 10:40 - 11:10 --- Coffee Break ---

- 11:10 - 12:00** **Murugappan MUTHUKUMAR** / *University of Massachusetts, Amherst, U.S.A.*
Theory and Modeling of Virus Assembly
- 12:00 - 12:50** **Per LINSE** / *Lund University, SWEDEN*
Virus Self-Assembly Induced by Polyions
- 12:50 - 14:50** --- Lunch Break ---
- 14:50 - 17:50** --- FREE AFTERNOON ---

THURSDAY, 27 SEPTEMBER 2012

27 September 2012

- 09:00 - 09:50** **Amelie LEFORESTIER** / *CNRS UMR, Universite de Paris-Sud, Orsay, FRANCE*
Architecture of the Bacteriophage Genome: Polymorphism and Phase Transitions
- 09:50 - 10:40** **Davide MARENDUZZO** / *University of Edinburgh, U.K.*
Viral DNA Packaging and Entanglement
- 10:40 - 11:10** --- Coffee Break ---
- 11:10 - 12:00** **Enzo ORLANDINI** / *Universita' degli Studi di Padova, ITALY*
DNA Organization Under Confinement: Hints from Topology
- 12:00 - 14:00** --- Lunch Break ---
- 14:00 - 14:50** **Alasdair STEVEN** / *NIH, Bethesda, U.S.A.*
Mechanics and Thermodynamics of Capsid Maturation
- 14:50 - 15:40** **Rob PHILLIPS** / *CALTECH, Pasadena, U.S.A.*
A Single-Molecule Hershey-Chase Experiment
- 15:40 - 16:10** --- Coffee Break ---
- 16:10 - 17:00** **Marta DE FRUTOS** / *Universite de Paris-Sud, Orsay, FRANCE*
Physical and Biological Mechanisms of DNA Transfer from T5 Phage
- 17:00 - 17:50** **NGUYEN Toan** / *Georgia Institute of Technology, Atlanta, U.S.A.*
Inhibition of DNA ejection from bacteriophage by Mg⁺² counterions

FRIDAY, 28 SEPTEMBER 2012

28 September 2012

- 09:00 - 09:50** **Stephen HARVEY** / *Georgia Institute of Technology, Atlanta, U.S.A.*
STMV: An All-Atom Three-Dimensional Model, then a Surprise!
- 09:50 - 10:40** **De Witt Lee SUMNERS** / *Florida State University, Tallahassee, U.S.A.*
Topological Methods in Physical Virology
- 10:40 - 11:10** --- Coffee Break ---

- 11:10 - 12:00** **Paul van der SCHOOT** / *Eindhoven Technical University, The Netherlands*
Influence of Charge Regulation on Encapsulation by Virus Coat Proteins of Functionalised Nanoparticles
- 12:00 - 14:00** --- Lunch Break ---
- 14:00 - 14:50** **Bogdan DRAGNEA** / *University of Indiana, Bloomington, U.S.A.*
On the Role of Geometrical Frustration in Virus-Like Particle Packaging
- 14:50 - 15:20** **3 short Presentations by Presenters of Prized Posters**
- 15:20 - 15:30** **Concluding Remarks**