

# From Solid State To BioPhysics

## ‘From Physics to Life Sciences’

The Program of the **5<sup>th</sup>** conference  
**Hotel ‘Croatia’, Cavtat, June 12-19, 2010**  
<http://dubrovnik2010.epfl.ch/>

**NOTE:** Due to speakers’ travel arrangements, some of the talks are not in the optimal session.

Unless specified otherwise, the length of the talk is 25' plus 5' discussion.



International

Conference

**Sponsored by:** Croatian Ministry of Science, Education and Sports / Biozon-Croatia & Dubrovnik Diocese (Croatia) / Creativity & development network - MRAK / Indigo Plavo

**Organization (co-)supported by:** Rudjer Boskovic Institute, Zagreb, Croatia / École Polytechnique Fédérale de Lausanne, Switzerland / Faculty of Science, Zagreb, Croatia / Institute of Physics, Zagreb, Croatia / University of Split, Croatia / University of Dubrovnik, Croatia



Republika Hrvatska  
Ministarstvo znanosti,  
obrazovanja i športa



**Saturday, June 12 : Arrivals**

18:00 – 20:00	<b>Registration at the PerfectMeetings Desk in the lobby oh hotel ‘Croatia’</b>
20:00 – 22:00	<b>Welcome Reception: Drinks and snacks at the 1<sup>st</sup> floor terrace</b>


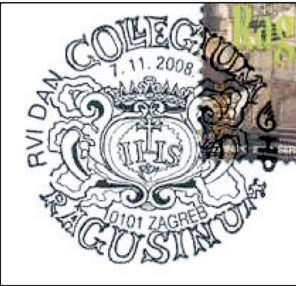
**Sunday, June 13: All talks take place in 'BOBARA' conference room on the 1<sup>st</sup> floor.**

8:45	<b>Introduction by László Forró</b> Chair: Davor Pavuna	
8:50	<b>Welcome by Danica Ramljak</b> , director of the Institute 'Rudjer Boskovic'	
<b>9:00</b>	<b>Greta Pifat-Mrzljak Memorial Session</b> Chair: Danica Ramljak	
9:00	Jacques Prost	Constructing tools for describing tissue dynamics
9:30	Domagoj Vucic	Targeting Inhibitor of Apoptosis (IAP) proteins for therapeutic intervention in tumors: from caterpillars to clinic
10:00	Igor Weber	Dual role of a Rac GTPase in the regulation of cell motility
<b>10:30</b>	<b>Coffee break</b>	
<b>11:00</b>	<b>BioPhysics I</b> Chair: Aleksandra Radjenovic	
11:00	Henrik Flyvbjerg	Single-Molecule Denaturation Mapping of DNA
11:30	Ana-Suncana Smith	Modeling cell adhesion: The bottom up approach
12:00	Dolores Bozovic	Coupling between nonlinear oscillators: hair cells of the inner ear
12:30	Janos Vörös	Cells and Currents: Approaches and Challenges
<b>13:00</b>	<b>Lunch Break</b>	
<b>15:00</b>	<b>Condensed Matter I</b> Chair: Oded Millo	
15:00	Arun Bansil	Explorations in the Physics of Materials and Some Connections
15:30	Ivan Bozovic	Atomic-Layer Engineering of Oxide Superconductors
16:00	Hilbert von Löhneysen	Magnetic Blue Liquid-Crystal-like Phase in MnSi
16:30	Tonica Valla	Dirac Electrons in Condensed Matter
<b>17:00</b>	<b>Tea Break</b>	
<b>17:30</b>	<b>Condensed Matter II</b> Chair: Felix Vidal	
17:30	Monique Combescot	On interactions between composite quantum particles
18:00	Roland Combescot	Ultracold Fermi gases: the strongly polarized limit
18:30	Zoran Radovic	Long-range odd spin-triplet superconductivity in Josephson junctions with multilayered ferromagnet
19:00	Miguel Alario-Franco	HP+HT oxidation and structural and magnetic order-disorder in the IrSr <sub>2</sub> RECu <sub>2</sub> O <sub>8+x</sub> (RE=Rare Earth) family
<b>20:00</b>	<b>Get-together I with food and drinks</b> <b>@1st floor terrace : 'Tsha-Coo' latino-world music</b>	

**Monday, June 14:**

<b>8:30 DNA Sequencing</b> Chair: Henrik Flyvbjerg		
8:30	Wilhelm J. Ansorge	Next-Generation DNA Sequencing Techniques & Applications
9:00	Jens H. Gundlach	Nanopore Sequencing with MspA
9:30	Jacques Rougemont	The ChIP-seq technology and circadian gene regulation
10:00	Xihua Chen	A Molecular Dynamics of Nanopore DNA Sequencing
<b>10:30</b>	<b>Coffee Break</b>	
<b>11:00 BioPhysics II</b> Chair: Wilhelm J. Ansorge		
11:00	Alan Bishop	Gene Sequence Control of Conformational Structure and Functions in DNA
11:30	Rama Bansil	Mucin Gels and Motility of the Ulcer Causing Bacterium
12:00	David M. Smith	Subtle Differences with Important Consequences in Enzymatic Diol Dehydration
12:30	Simone Melchionna	Cardiovascular blood flows with suspended red blood cells via computer simulation
<b>13:00</b>	<b>Lunch Break</b>	
<b>15:00 NanoPhysics I</b> Chair: Silvija Gradecak		
15:00	Harald Brune	Graphene mono- and bilayers on close-packed metal surfaces
15:30	Slaven Garaj	Graphene Nanopores
16:00	Wolf-Dieter Schneider	Quantum oscillations, superconductivity, pseudogaps, zero-bias anomalies, and Coulomb blockade in nanoscaled metal films
16:30	Yang Zhao	Dynamics of energy transfer in light-harvesting antenna systems
<b>17:00</b>	<b>Tea Break</b>	
<b>17:30 NanoPhysics II</b> Chair: Slaven Garaj		
17:30	Silvija Gradecak	Frontiers of nanotechnology: semiconductor nanowires
18:00	Ivanka Milosevic	Coiled Carbon Nanotubes: Symmetry and Electronic Structure
18:30	Milan Damjanovic	Diffraction from quasi one-dimensional crystals and nanotubes
<b>19:30 - 22:30</b> <b>POSTER Session</b> Chair: Markus Bonda with food & drinks at the nearby 1 <sup>st</sup> floor terrace		

Tuesday, June 15:

<b>9:00 NanoPhysics III</b>		Chair: Wolf-Dieter Schneider
9:00	Oded Millo	Transport of Single Semiconductor Nanorods and Their Arrays
9:30	Toshio Ando	High-speed AFM and Visualization of Biomolecular Processes
10:00	Atsushi Ikai	Mechanics of Cytoskeletal Network as Probed by AFM
10:30	Aleksandra Radjenovic	DNA/ Graphene hybrid nanostructures
11:00 <b>Coffee Break</b>		
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<b>11:30 2010 P.-G. de Gennes Prize Session</b>		Chair: Dolores Bozovic
11:30	<a href="#">Ioan Kosztin</a>	Multiscale modeling of molecular transport in channel proteins and artificial nanopores
12:00	<a href="#">Todd Squires</a>	Microrheology of fluid interfaces: visualization, viscoelasticity, yielding, and slow recovery of phospholipid monolayers
13:00 <b>Lunch Break</b>		
15:00	<b>Excursion to Dubrovnik</b> on the sailing boat <i>including a tour of the old city</i> <i>(personal option: a tour of the wells after 5pm)</i>	
18:00	Reception offered by the ‘‘Collegium Ragusinum’’, grammar school <i>Rudjer Boskovic</i> :	
	Collegium Ragusinum, Dubrovnik	
	 	
	CROATIA, 2008, the 350th anniversary of Dubrovnik College and its special FDI cancel	
20:00	<b>Conference Buses to return to Cavtat</b>	
22.30		

**Wednesday, June 16:**

<b>8:30 BioPhysics IV</b>			Chair: Yael Hanein
8:30	Istvan Simon	Binding of unstructured proteins into structured ones	
9:00	Vilmos Fülöp	Oligopeptidases in peptide processing memory disorders and pathogen virulence – a biophysical approach	
9:30	Igor Stagljar	Protein Networks Regulating Cell Signaling in Human Health	
10:00	Janne T. Hyötylä	Synthetic protein targeting based on polyethylene glycol	
<b>11:00 BioPhysics V</b>			Chair: Igor Stagljar
11:00	Miklos Kellermeyer	Epitaxial Assembly Kinetics of Mutant Amyloid Beta 25-35 Fibrils	
11:30	Ulrich Bockelmann	Single molecule force measurements on RNA protein interactions	
12:00	Vladimir Lorman	Structural Transformation During Virus Maturation Process	
12:30	Sergey Sirotkin	Low frequency Raman by vibration modes from large viruses	
<b>13:00</b>	<b>Lunch Break</b>		
<b>15:00 BioPhysics VI</b>			Chair: Vladimir Lorman
15:00	Oleg Gang	Nanoscale Systems Assembly via Bio-Programmable Interactions	
15:30	Yael Hanein	Role of Neurite Mechanical Tension in Neural Networks	
16:00	Gladys Massiera	Continuous droplet interface crossing encapsulation (cDICE) for high through-put monodisperse vesicle design	
16:30	E. R. Teixeira da Silva	Polymorphism of DNA superstructures in zwitterionic L phases	
<b>17:00</b>	<b>Tea Break</b>		
<b>17:30 NanoPhysics IV</b>			Chair: Ivanka Milosevic
17:30	Christian Schönenberger	Nanowire Field-Effect Sensors for Chemical and Biochemical Applications	
18:00	Christoph Strunk	Spin-Effects in Single-Wall Carbon Nanotubes	
18:30	Andreas Schüler	Semiconductor-metal transition in vanadium dioxide based thin films: towards “smart” solar energy materials	
<b>20:30</b>	<b>The Conference BANQUET</b> with Croatian folk group "Raguza"		

**Thursday, June 17:**

<b>9:00 BioPhysics VII</b> Chair: Ana-Sunčana Smith		
9:00	Jasna Peter-Katalinic	The importance of being dissected: fragmentation of complex carbohydrates in the gas phase
9:30	B. Ubbo Felderhof	A Sperm Swimming Down an Artery
10:00	Markus Bonda	Neuronal Deficiencies studied by Synchrotron-assisted Infrared Microspectroscopy
10:30	Tomislav Vuletic	Structure and Dynamics of Hyaluronic Acid Semidilute Solutions: A Dielectric Spectroscopy Study
<b>11:00</b>	<b>Coffee Break</b>	
<b>11:30 BioPhysics VIII</b> Chair: B. Ubbo Felderhof		
11:30	Rudolf Podgornik	Disorder effects in Casimir - van der Waals interactions
12:00	Paolo de los Rios	New regimes in the physics of polymers
12:30	Giuseppe Foffi	Stability of Eye-lens Protein Mixtures
<b>13:00</b>	<b>Lunch Break</b>	
<b>15:00 Bio-Imaging</b> Chair: Tomislav Vuletic		
15:00	Theo Lasser	Coherent Imaging - From Cells to Molecule
15:30	Gyula Faigel	Structure Determination of Individual Small Particles by XFEL-s
16:00	Antonio Cricenti	Fluorescence and IR Nanospectroscopy of Biological Samples
<b>16:30</b>	Luigi Bonacina	Second Harmonic Imaging Probes for Bio-Labeling
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17:00	<b>Tea Break</b>	
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<b>17:30 BioPhysics IX</b> Chair: Luigi Bonacina		
17:30	Elvira Steinwand	Coherent diffraction microscopy with low-energy electrons
18:00	Bojan Resan	Compact ultrafast lasers for biomedical applications
18:30	Irena Kratochvílová	Charge Transport in DNA Oligonucleotides with Various Base-Pairing Patterns
19:00	Laura Chronopoulou	Structure-Performance Relationships of Lipolytic Enzymes
<b>20:00</b>	<p style="text-align: center;"><b>Get together II</b> : food &amp; drinks with 'Tsha-Coo' music at the upper 1<sup>st</sup> floor terrace</p>	

**Friday, June 18:**

<b>9:00 BioPhysics X</b> Chair: Sven Bergmann		
9:00	Joël Mesot	From fundamental research to medical applications: examples from the Paul Scherrer Institute
9:30	Marco Stampanoni	Tomographic Hard X-ray Phase Contrast Micro- and Nano-imaging at Swiss Light Source
10:00	Bart Deplancke	DNA-centered gene regulatory network mapping
10:30	Felix Naef	Modeling single gene transcription kinetics in mammalian cells by monitoring high temporal resolution gene expression kinetics
<b>11:00 Coffee Break</b>		
<b>11:30 BioPhysics XI</b> Chair: Bart Deplancke		
11:30	Theo Geisel	The Scaling Laws of Human Travel: Tracking Dollars for New Approaches to Epidemic Modeling
12:00	Sven Bergmann	What can be learned from a large clinical cohort
12:30	Iva Tolic-Norrelykke	Do All Organisms Age?
<b>13:00 Lunch Break</b>		
<b>15:00 Condensed Matter III</b> Chair: Joël Mesot		
15:00	Henrik Ronnow	Criticality in the dipolar coupled model systems LiReF <sub>4</sub>
15:30	Igor Zoric	Localized plasmons in metallic nanoparticles : What are they and what are they good for
16:00	Alexej Pashkin	Femtosecond Dynamics of Phonons and Quasiparticles in Superconducting YBa <sub>2</sub> Cu <sub>3</sub> O <sub>7</sub> by multi-THz Spectroscopy
16:30	Neven Barisic	Optical Investigations on Iron-Pnictides
<b>17:00 Tea Break</b>		
<b>17:30 - 18:30 CLOSING DISCUSSION</b> Chair: László Forró		
19:30	<i>Facultative visit to Cavtat restaurants</i> - to be coordinated informally after the last session	

**Saturday, June 19: Departures**