International Conference
"*Dynamics of Systems on the Nanoscale*"

DySoN Conference 2016

Häcker's Grand Hotel, Bad Ems, Germany
October 03 - 07, 2016

DYSON 2016

SECOND ANNOUNCEMENT

Scope

The Fourth International Conference "Dynamics of Systems on the Nanoscale" (DySoN 2016) will be held in Bad Ems, Germany during October 3-7, 2016 at the historical Häcker's Grand Hotel. The Conference will be followed on October 8-9 with the comprehensive training course on multiscale modelling of Meso-Bio-Nano (MBN) systems, their structure and dynamics with MBN Explorer and MBN Studio – the powerful and universal software being developed by MBN Research Center in Frankfurt am Main, Germany.

The DySoN conference has been built upon a series of International Symposia "Atomic Cluster Collisions: structure and dynamics from the nuclear to the biological scale (ISACC)" (see www.isacc-portal.org). During these meetings it has become clear that there is a need for an interdisciplinary conference covering a broader range of topics than just atomic cluster collisions, related to the Dynamics of Systems on a Nanoscale. Therefore, in 2010 the ISACC International Advisory Committee decided to launch a new conference series under the title "Dynamics of Systems on the Nanoscale". The first DySoN conference took place at the National Research Council, Rome, Italy in 2010, the second conference was held in St. Petersburg, Russia in 2012, the third one was held in Edinburgh, UK in 2014. DySoN 2016 is the fourth conference in this series.

The DySoN 2016 Conference will promote the growth and exchange of interdisciplinary scientific information on the structure formation and dynamics of animate and inanimate matter on the nanometre scale. There are many examples of complex many-body systems of micro- and nanometre scale size exhibiting unique features, properties and functions. These systems may have very different nature and origin, e.g. atomic and molecular clusters, nanostructures, ensembles of nanoparticles, nanomaterials, biomolecules, biomolecular and mesoscopic systems. A detailed understanding of the structure and dynamics of these systems on the nanometre scale is a difficult and fundamental task, the solution of which is necessary in numerous applications of nano- and bio-technology, material science and medicine.

Although mesoscopic, nano- and biomolecular systems differ in their nature and origin, a number of fundamental problems are common to all of them: What are the underlying principles of self-organization and self-assembly of matter at the micro- and nanoscale? Are these principles classical or quantum? How does function emerge at the nano- and mesoscale in systems with different origins? Which criteria govern the stability of these systems? How do their properties change as a function of size and composition? How are their properties altered by their environment? Seeking answers to these questions is at the core of a new interdisciplinary field that lies at the intersection of physics, chemistry and biology, a field now entitled Meso-Bio-Nano (MBN) Science.

Experimental, theoretical and applied aspects of these problems will be discussed at the DySoN 2016 Conference. Particular attention will be devoted to dynamical phenomena and many-body effects taking place in various MBN systems on the nanoscale, which include problems of structure formation, fusion and fission, collision and fragmentation, surfaces and interfaces, collective electron excitations, reactivity, nanoscale phase and morphological transitions, irradiation driven transformations of complex molecular systems, biodamage, channelling phenomena and many more.

DySoN 2016 aims also at highlighting the breakthroughs achieved within the currently running COST Action CM1301 CELINA - "Chemistry for ELectron-Initiated Nanolithography", and the project FP7-ITN-ARGENT-608163 - "Advanced Radiotherapy, Generated by Exploiting Nanoprocesses and Technologies". The latter project inherited and extended the scopes of the recently ended COST Action Nano-IBCT - "Nanoscale insights into ion-beam cancer therapy" towards the understanding of nanoparticle impacts on biological systems and related biomedical applications. Therefore, DySoN 2016 will continue traditions of the earlier Nano-IBCT Conference series.

Also the mini-workshop "Periodically bent crystals for crystalline undulators" held within the HORIZON 2020 RISE-PEARL-690991 project will be linked to DySoN 2016. The research areas represented by the mentioned European projects overlap strongly with the Topical Areas of the DySoN Conference.

Finally, DySoN 2016 will provide a platform to host discussions about current and future research challenges and initiatives within the DySoN Conference Topical Areas.

Proceedings of the DySoN 2016 Conference will be published in the dedicated Topical Issue of the European Physical Journal D: Atomic, Molecular, Optical and Plasma Physics. Submission deadline is December 30, 2016.

Sponsors

The conference will be held under the auspices of the following sponsors:

- MBN Research Center, Frankfurt am Main, Germany
- HORIZON 2020 RISE-PEARL-690991
- FP7-ITN-ARGENT- 608163
- Springer

Important Dates

Distribution of the first announcement	February 23**,** 2016
Distribution of the second announcement	June 10**,** 2016
Distribution of the third announcement	September 01**,** 2016
Deadline for abstract submission	August 01**,** 2016
Deadline for early registration and hotel reservation	August 01**,** 2016
Deadline for registration	September 15**,** 2016
Deadline for proceedings submission	December 30, 2016

DySoN 2016 Program

Monday, 03 October 2016

12^{00} - 16^{00}	Participants registration
14^{00} - 14^{15}	**DySoN2016 Opening**
14^{15} - 16^{15}	Afternoon session I: **Structure and dynamics of clusters and nanoparticles**
16^{15} - 16^{45}	Coffee break
16^{45} - 18^{15}	Afternoon session II: **Nanoscale phase and morphological transitions**
19^{00} - 21^{00}	Welcome reception

Tuesday, 04 October 2016

9^{30} - 11^{00}	Morning session I: **Multiscale physics of radiation damage processes**
11^{00} - 11^{30}	Coffee break
11^{30} - 13^{00}	Morning session II: **Nanostructured materials**
13^{00} - 14^{30}	Lunch
14^{30} - 16^{00}	Afternoon Session I: **Biomedical applications of radiation**
16^{00} - 18^{00}	Coffee and poster session

Wednesday, 05 October 2016

9^{30} - 11^{00}	Morning session I: **Surfaces and interfaces**
11^{00} - 11^{30}	Coffee break
11^{30} - 13^{00}	Morning session II: **Structure and dynamics of clusters, nanoparticles and biomolecules**
13^{00} - 13^{15}	Conference photo
13^{15} - 14^{30}	Lunch
14^{30} - 16^{00}	Afternoon Session I: **Electron transport in molecular systems** **Conference discussion:** *From nuclear to meso systems: how small is simple and how large is complex?*
16^{00} - 18^{00}	Conference tour

Thursday, 06 October 2016

9^{30} - 11^{00}	Morning session I: **Propagation of particles through medium: H2020 RISE-PEARL Project**
11^{00} - 11^{30}	Coffee break
11^{30} - 13^{00}	Morning session II: **Collision processes, fusion, fission, fragmentation**
13^{00} - 14^{30}	Lunch
14^{30} - 16^{00}	Afternoon Session I: **Propagation of particles through medium: H2020 RISE-PEARL Project**
16^{00} - 16^{30}	Coffee break
16^{30} - 18^{00}	Afternoon session II: M**odelling of nano- and biomolecular systems**
19^{00} - 22^{30}	Conference dinner

Friday, 07 October 2016

9^{30} - 11^{00}	Morning session I: **Clusters and nanoparticles: structure, reactivity and catalysis**
11^{00} - 11^{30}	Coffee break
11^{30} - 13^{00}	Morning session II: **Irradiation driven transformations of complex molecular systems**
13^{00} - 13^{30}	**Final discussion and conference closing**
13^{30} - 14^{00}	Lunch and departure

Confirmed Speakers

Katrine Aalbæk Jepsen, University of Southern Denmark, Odense, Denmark
Recognition of DNA-UV damage by repair enzymes

Hartmut Backe, Institute of Nuclear Physics, Johannes Gutenberg-Universität Mainz, Germany
Channeling experiments with electrons at the Mainz Microtron MAMI

Enrico Bagli, Istituto Nazionale di Fisica Nucleare (INFN), Ferrara, Italy
Introducing crystalline structure into the Geant4 toolkit

Ilko Bald, Institut für Chemie - Physikalische Chemie, Universität Potsdam, Germany
Decomposition of DNA close to irradiated metal nanoparticles

Victor Balykin, Institute of Spectroscopy, Russian Academy of Sciences, Troitsk, Russia
Giant optical nonlinearity of a single plasmonic nanostructure

Laura Bandiera, Istituto Nazionale di Fisica Nucleare (INFN), Ferrara, Italy
Bent crystals as a tool for electron beams manipulation

Kit Bowen, Johns Hopkins University, Baltimore, USA
Molecular and cluster anions with highly delocalized excess electrons

Florent Calvayrac, Institut des Molecules et Materiaux, Universite du Maine, Le Mans, France
Structure, magnetism, thermal and optical properties of some functionalized iron oxide nanoparticles and clusters of medical and industrial interest

Florent Calvo, University Joseph Fourier - Grenoble 1, France
Evidence for non-statistical behavior in the collision-induced fragmentation of water clusters

Simon Connell, University of Johannesburg, Republic of South Africa
Towards a diamond crystal undulator

Jean-Patrick Connerade, Imperial College, London, UK
From nuclear to meso systems: how small is simple and how large is complex?

Pablo de Vera, Queen's University, Belfast, UK
Molecular dynamics insights into the biological effects of shock waves induced by ions

Wolfgang Ernst, Graz University of Technology, Graz, Austria
Surface deposition of metal clusters and nanowires formed in superfluid helium droplets

Franco Gianturco, University of Innsbruck, Innsbruck, Austria
State-changing collisions of molecular anions in cold traps: Experiments and Quantum models

Steffen Greilich, German Cancer Research Center (DKFZ), Heidelberg, Germany
Assessing microscopic energy-deposition pattern in ion-beam therapy using fluorescent nuclear track detectors

Vincenzo Guidi, Universita di Ferrara, Italy
Gas sensing via chemoresistive effect in nanosizes semiconductors

Kaspar Haume, Open University, Milton Keynes, UK
Transport of secondary electrons from gold nanoparticles through PEG coating

Bernd Huber, CEA-CIMAP, Caen, France
Energetic processing of carbon-containing nanopartciles by ion collisions

Vadim Ivanov, Peter the Great St. Petersburg Polytechnic University, Russia
Ab initio calculations of potential and electron density distribution of C_{60}^+, C_{60} and C_{60}^-

Julius Jellinek, Argonne National Laboratory, Lemont, USA
Solving the problem of anharmonic densities of states

Nouari Kebaili, Laboratoire Aime Cotton, CNRS, Orsay, France
Preformed clusters deposition: a probe for surface states characterization

Christian Kexel, MBN Research Center, Frankfurt am Main, Germany
Molecular simulation of interstellar ice surfaces

Shiv N. Khanna, Virginia Commonwealth University, Richmond, USA
Effect of support in reducing sintering, improving catalytic activity, and stabilizing magnetic order in deposited clusters

Jorge Kohanoff, Queen's University, Belfast, UK
Excess electrons and holes in irradiated systems: from DNA to nuclear waste forms

Andrei Korol, MBN Research Center, Frankfurt am Main, Germany
Investigation of channeling and crystalline undulator with MBN Explorer

Werner Lauth, Institute of Nuclear Physics, Johannes Gutenberg-Universität Mainz, Germany
Status report of undulator experiments at MAMI

Nigel J. Mason, Open University, Milton Keynes, UK
Ices and thin films irradiation

Andrea Mazzolari, Universita di Ferrara, Italy
Recent developments in manufacturing of crystalline undulators

Richard Palmer, University of Birmingham, Birmingham, UK
Atomic structure and dynamics of size-selected nanoclusters

Antoine Rodolphe, University Lyon 1, France
Optical properties of silver and gold quantum clusters: playing with colors and photons

Ulf Saalmann, Max Planck Institute for the Physics of Complex Systems, Dresden, Germany
Dynamical coupling of electrons and ions in X-ray-induced dynamics

Malgorzata Smialek, Gdansk University of Technology, Gdansk, Poland
Oligo-modified NPs for cancer therapy

Andrey V. Solov'yov, MBN Research Center, Frankfurt am Main, Germany
Multiscale modelling of Meso-Bio-Nano systems with MBN Explorer

Kurt Stokbro, QuantumWise A/S, Copenhagen, Denmark
First principles simulation of electron transport across a metal-insulator interface

Eric Suraud, Universite Paul Sabatier, Toulouse, France
Dissipation in clusters and molecules

Eugene Surdutovich, Oakland University, Rochester, USA
Multiscale approach to the physics of ion-beam cancer therapy: from prediction to experiment

Thu Nhi Tran Caliste / Jürgen Härtwig / Raymond Barrett, ESRF, Grenoble, France
Diffraction topography as an industrial tool for the characterisation of crystalline quality

Ulrik Uggerhoj, Aarhus University, Denmark
Radiation phenomena at high energies in crystals

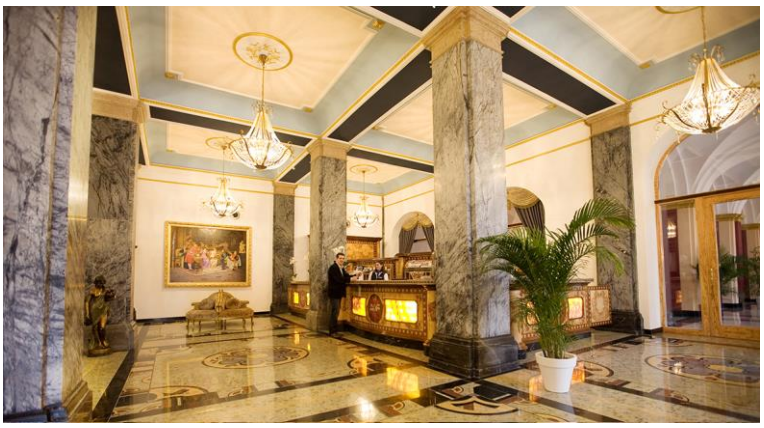
Yuri Vainer, Institute of Spectroscopy, Russian Academy of Sciences, Troitsk, Russia
Spectral dynamics of individual fluorescent molecules in ultrathin nanofilms and subsurface layers of amorphous polymer at low temperatures

Alexey Verkhovtsev, Instituto de Física Fundamental, CSIC, Madrid, Spain
Predictive assessment of biological damage due to ion beams

Andrew Wheatley, University of Cambridge, UK
New avenues in nanocatalyst recyclability

Conference Venue and Travel Information

The Conference will be hosted by Häcker's Grand Hotel, Bad Ems, Germany**.**



Bad Ems is located approximately 100 kilometers to the north-west from Frankfurt and 100 kilometers to the south from Cologne. You can get to Bad Ems by train from the Frankfurt Airport (www.frankfurt-airport.com) or Cologne/Bonn Airport (www.koeln-bonn-airport.de/en.html), or by car.

By train from:

- Frankfurt Airport, with flights to many cities in Europe:
  (i) take a direct high-speed train (ICE) to Montabaur (20 km northeast of Koblenz) (approx. 30 min), or
  (ii) take a direct train (IC/RE) to Koblenz (approx. 1.5 h) and then change to a regional train (RB) to Bad Ems (approx. 25 min)
- Cologne/Bonn Airport: take a RE train to Koblenz (approx. 1.5 h) and then a train to Bad Ems.
- Frankfurt Main Railway Station (Frankfurt Hauptbahnhof): take a regional train to Limburg, Niederlahnstein or Koblenz (approx. 1.5-2 h), and change there to a train to Bad Ems.

The actual train schedule and tickets can be found at www.bahn.de

The taxi-transfer from Koblenz and Montabaur will be organised upon the in advance arrangement.

By car: take the exit 40-Montabauer from the A3 Highway**.**

Detailed information on how to reach the conference venue will be circulated closer to the arrival date.

Registration

The number of rooms reserved at the hotel for conference participants is limited. We advise the participants to register for the conference and the hotel at the earliest convenience.

Level of participation	**Conference fee**	
	before August 01, 2016	**after August 01, 2016**
Regular participant	370 Euro	450 Euro
Student participant	270 Euro	350 Euro
Tour cost	30 Euro	30 Euro
Banquet ticket	50 Euro	50 Euro

The fee includes the book of abstracts, coffee breaks, lunches and the conference reception. The payment to the order of "DySoN 2016" should be made

By bank transfer to

Bank Account Name:	MBN Research Center *gGmbH*
Bank name:	Deutsche Bank
Branch Address:	Hauptstr. 5, 61462 Koenigstein, Germany
IBAN:	DE15500700240137588000
BIC:	DEUTDEDBFRA

Please quote your **NAME** and **DYSON** on the transfer.

Please ensure there are NO charges to us.

Accommodation

Please book accommodation directly with the Häcker's Grand Hotel, Bad Ems, Germany and quote the DySoN conference, see also the link on the Conference site. The rooms are being held until 2 months before the conference and will then be released so please book early.

Abstract Submission

Abstracts should be submitted electronically not later than **August 01, 2016**. Please send your abstracts to the team of MBN Research Center at team@mbnexplorer.com with the title "DySoN 2016 Abstract".

The length of the abstract should not exceed two pages. The abstract template is available for downloading at http://mbnresearch.com/dyson-2016-abstracts.

Social Program

Event	**Date / Time**
Conference reception	Monday, October 03, 2016, 19^{00} - 21^{00}
Conference tour	Wednesday, October 05, 2016, 16^{00} - 18^{00}
Conference dinner	Thursday, October 06, 2016, 19^{00} - 22^{30}

Bad Ems is a small town which is well known as a bathing resort on the river Lahn. On Wednesday, October 05, a guided tour along the historical center of Bad Ems will be organized. During this tour, the participants of DySoN 2016 will have an opportunity to learn more about the history of this place, which was considered in 17^{th} – 19^{th} centuries as one of Germany's most famous bathing resorts and became the summer residence of various European monarchs and artists.

Official Invitation and Visa

Conference participants are advised to check the passport and visa requirements for travel to Germany.

Conference Language

The language of the conference is English.

International Advisory Committee

- Andrey V. Solov'yov (MBN Research Center, Frankfurt am Main Germany), **Chair**
- Catherine Bréchignac (Laboratoire Aime Cotton, CNRS, Orsay, France)
- Michel Broyer (University of Lyon, Lyon, France)
- Jean-Patrick Connerade (Imperial College, London, UK)
- Franco A. Gianturco (The University of Innsbruck, Innsbruck, Austria)
- Julius Jellinek (Argonne National Laboratory, Argonne, Illinois, USA)
- Shiv N. Khanna (Virginia Commonwealth University, Richmond, USA)
- Nigel J. Mason (The Open University, Milton Keynes, UK)
- Eugene Surdutovich (Oakland University, Rochester, USA)

Organizing Committee

- Andrey V. Solov'yov (MBN Research Center, Frankfurt am Main, Germany), **Chair**
- Alexey Verkhovtsev (IFF-CSIC, Madrid, Spain / MBN Research Center, Frankfurt am Main, Germany)
- Christian Kexel (MBN Research Center, Frankfurt am Main, Germany)
- Andrei Korol (MBN Research Center, Frankfurt am Main, Germany)
- Stefan Schramm (Goethe University, Frankfurt am Main, Germany)
- Irina Solovyeva (MBN Research Center, Frankfurt am Main, Germany)

Contact Information

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DySoN Conference Web Page

Updated information on the conference is available at the following internet address:
www.mbnresearch.com/dyson-2016

Conference e-mail

team@mbnexplorer.com