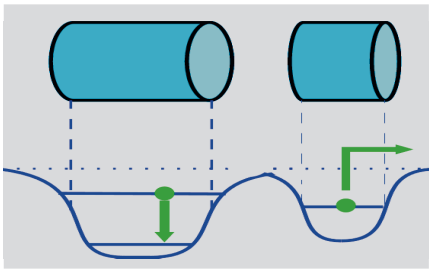
HZB Helmholtz Zentrum Berlin

Dynamics of Energy Transfer on the Nanoscale

25 - 27 September 2017



Helmholtz-Zentrum Berlin für Materialien und Energie
Wilhelm-Conrad-Röntgen-Campus (Berlin Adlershof)
Albert-Einstein-Str. 15
12489 Berlin

freigeist2017@helmholtz-berlin.de

INTERDISCIPLINARY WORKSHOP

- Theory and Experiment
- Quantum Dots and Atoms
- Energy and Electron Transfer
- Chemistry, Physics, and Materials Science

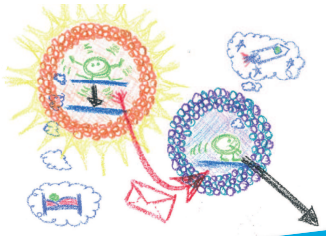
CONFIRMED SPEAKERS

M. Atatüre, I. Barke, G. Bester, A. Dutoi, A. Csehi, M. Geller, K. Gokhberg, T. Goldzak, T. Jahnke, A. Martínez Mesa, S. Masuo, C. Morrison, K. Müller, F. Pauly, D. Peláez, T. Petit, F. Pont, F. Rossella, A. Scrinzi, J.-C. Tremblay

SCOPE OF THE WORKSHOP

Ultrafast energy transfer is elementary to clusters of atoms and molecules on a picometer scale, but it is also relevant on the nanoscale in assemblies of biomolecules or inorganic nanostructures. An example is the light-induced inter-Coulombic decay in semiconductor quantum dots predicted by electron dynamics calculations.

This interdisciplinary workshop is meant to elucidate the facets of electron dynamics methodologies, of energy transfer experiments with semiconducting nanomaterials and of inter-Coulombic processes. Bridging from there to lasing and scattering processes, to electron transfer, or to metal nanoparticles shall emerge unforeseen connecting points between disciplines.



With generous support of: VolkswagenStiftung

Online Application and Abstract Submission until
June 15th, 2017

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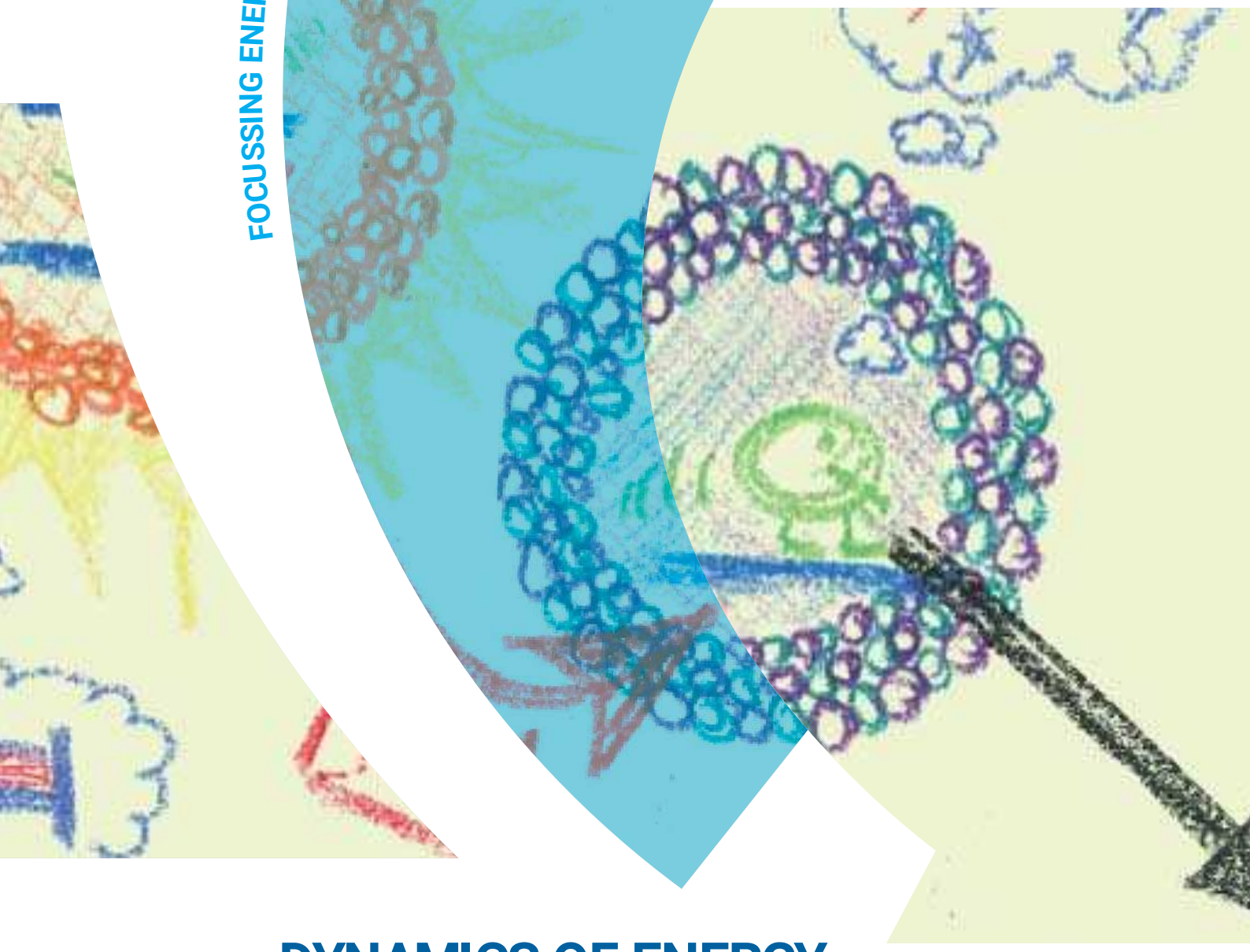
FOCUSSING ENERGY REALIZING VISIONS



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Program

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1st Day - Monday, September 25th, 2017		
17.00	Registration and Refreshments	
18.00	Opening Remarks (Annika Bande)	
	Welcome to the ICD World (Chair: Uwe Hergenhahn)	
18.05	Till Jahnke, Frankfurt University	Experimental Investigations on Interatomic Coulombic Decay - Introduction and Overview
18.35	Kirill Gokhberg, Heidelberg University	Electron Transfer Processes and Neutralization of Multiply Charged Ions in Clusters
19.05	Welcome Reception at HZB Lobby	

2st Day - Tuesday, September 26th, 2017		
08.00	Registration	
09.00	Opening (Chair: Annika Bande) • Welcome by the Helmholtz-Zentrum Berlin (Bernd Rech) • Welcome by the Volkswagen Foundation (Oliver Grewe)	
	Electron Dynamics and Energy Transfer in Quantum Materials (Chair: Beate Paulus)	
09.20	Tamar Goldzak, MIT Boston	Towards a Wavelength Sensitive Detector, Based on ICD in a System of Coupled Quantum Wells
09.50	Jean-Christophe Tremblay, Freie Universtität Berlin	Laser Control of Electron Dynamics in Quantum Dots
10.20	Annika Bande, Helmholtz-Zentrum Berlin	A Freigeist's Vision on Energy Transfer Experiments in Quantum Dots
10.40	Martin Lützner, Helmholtz-Zentrum Berlin	Approaches to Electron Dynamics in Neutral Quantum Dots: Overview and Challenges
10:55	Coffee Break	
	Quantum Dot Experiments (Chair: Christoph Merschjann)	
11.20	Martin Geller, Duisburg-Essen University	Carrier Dynamics Measured in Resonance Fluorescence on a Single Quantum Dot
11.50	Kai Müller, TU Munich	Quantum Couplings and Dynamics in Vertically Stacked InAs Quantum Dot Molecules
12.20	Francesco Rossella, Scuola Nat. Superiore, Pisa	Stark Effect Controlled Heterostructured Nanowire Quantum Dot Single Electron Devices
12.50	Group Picture	
12.50	Lunch Break	
	Scattering-Induced Energy Transfer and Conversion (Chair: Nicolas Sisourat)	
14.15	Federico Pont, University of Cordoba	Interatomic Coulombic Electronic Capture in Quantum Dots Embedded in Semiconductor Nanowires
14.45	Axel Molle, Helmholtz-Zentrum Berlin	Electron Snooker through Metastable Bound States
15.00	Carole Morrison, University of Edinburgh	The Big Bang Theory: Predicting Impact Sensitivities for Energetic Materials from First Principles
15.30	Robert Stockill, University of Cambridge	Optical Networks of Quantum Dot Spins
16.00	**Poster Session** (End 18.00)	
18.50	Bus transfer to the Speakers Dinner from Lecture Hall	
20.00	Entering TV-Tower as a group	
20.10	Speakers Dinner	
23.00	Bus transfer from Speakers Dinner to the Dorint Hotel	

3rd Day - Wednesday, September 27th, 2017		
	Laser Control (Chair: Lorenz Cederbaum)	
09.00	Armin Scrinzi, LMU Munich	Field Induced Dynamics in Multi-Electron Systems: haCC - Hybrid Anti-Symmetrized Coupled Channels
09.30	András Csehi, University of Debrecen	Controlling Photodissociation Dynamics by Frequency Chirped Laser Pulses
10.00	Anika Haller, Helmholtz-Zentrum Berlin	Laser Initiation of the Inter-Coulombic Decay Process in Quantum Dots
10:15	Anthony Dutoi, University of the Pacific	Coherence of Particles and Holes in Excitation Migration & Spectroscopic Detection of Electron Dynamics
10.45	Coffee Break	
	Electron Transfer, Superexchange and MCTDH (Chair: Alexandra Freidzon)	
11.15	Tristan Petit, Helmholtz-Zentrum Berlin	Carbon-Based Nanomaterials for Photocatalytic Applications
11.45	Fabian Weber, Helmholtz-Zentrum Berlin	Properties of Grapheneoxide QDs: An Approach for Combining Theory and Experiment
12.00	Tsveta Miteva, University Pierre and Marie Curie	Interatomic Coulombic Decay Mediated by Ultrafast Superexchange Energy Transfer
12.30	Daniel Peláez, Lille University	New Developments in the Sum-of-Products Representation of the Potential Energy Surface in Quantum Dynamical Problems
13.00	Lunch Break	
	Perspectives/Metallic Nanoparticles and Quantum Dots (Chair: Matthias Berg)	
14.15	All Participants	Round-Table Discussion: Perspectives for Theory and Experiment
14.45	Ingo Barke, University of Rostock	Spatially Resolved Electron Emission from Metallic and Molecular Nanostructures
15.15	Sadahiro Masuo, Kwansei Gakuin University	Control of Emission Photon Statistics from a Single Quantum Dot Using Plasmonic Nanostructures
15.45	Aliezer Martínez Mesa, University of Havana	Mechanisms of Energy Redistribution in Laser-Driven Dynamics in Interconnected Quantum Dot - Metal Nanoparticle Systems
16.15	Closing Remarks	
16.20	Coffee and Departure	
16.20	Feedback Round with Advisers	
17.00	End of Workshop	