

**Program of the International CECAM-Workshop**  
**Crystal defects for qubits, single photon emitters and nanosensors**  
**Bremen Center for Computational Materials Science – BCCMS**  
**University of Bremen, July 9<sup>th</sup> - 13<sup>th</sup> 2018**  
**Conference site: House of Science, Downtown**

Monday, July 9<sup>th</sup> 2018 (Radisson Blu Hotel)

**18:00 – 21:00      Registration**

Tuesday, July 10<sup>th</sup> 2018 (House of Science Bremen, Downtown)

**08:00 – 08:50      Registration**

**08:50 – 09:00      Opening and welcome, Thomas Frauenheim**

**Session:              Quantum defects for qubits**

***Chair: Thomas Frauenheim***

**09:00 – 09:40      Joerg Wrachtrup, University of Stuttgart, Germany**  
*Applying single solid state quantum defects*

**09:40 – 10:20      David D. Awschalom, The University of Chicago, Illinois, USA**  
*Controlling defect spin states with photons, magnons, and phonons*

**10:20 – 10:45      Coffee Break**

**10:45 – 11:25      Ádám Gali, Wigner Research Centre for Physics, Hungarian Academy of Sciences, Budapest, Hungary**  
*Toward full ab initio description of qubits in solids*

**Session:              Spin states**

***Chair: Peter Deák***

**11:25 – 12:05      Fedor Jelezko, Ulm University, Germany**  
*Photoelectrical readout of single spins in diamond*

**12:05                  Group photo**

**12:15 – 13:35      Lunch Break (Restaurant Q1) and Coffee**

**13:35 – 14:15      Ronald Hanson, Delft University of Technology, The Netherlands**  
*The dawn of quantum networks*

**14:15 – 14:55      Martin B. Plenio, Ulm University, Germany**  
*Controlling nuclear spin registers by NV centers*

**Session:              Quantum spintronics**

***Chair: Michael Lorke***

**14:55 – 15:35      Mike J. Ford, University of Technology Sydney, New South Wales, Australia**  
*Evaluating electronic structure calculations of single photon emitting defects in hBN*

**15:35 – 16:00      Coffee Break**

**16:00 – 16:40      Marcus W. Doherty, Australian National University, Canberra, Australia**  
*Quantum spintronic properties of diamond nanowires*

**16:40 – 17:20      Jeronimo R. Maze, Pontifical Catholic University of Chile, Santiago**  
*Effect of phonons on individual electronic spin relaxation and electron spin resonance*

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**18:00 – 20:30 Welcome Reception (Bremen Town Hall)**

Wednesday, July 11<sup>th</sup> 2018 (House of Science Bremen, Downtown)

**Session: Quantum probes and quantum control**

***Chair: Joerg Wrachtrup***

**09:00 – 09:40** Gavin W. Morley, University of Warwick, Coventry, UK  
*Levitating nanodiamonds containing NV centers*

**09:40 – 10:20** John J. L. Morton, University College London, UK  
*Strain effects on donor spins in silicon*

**10:20 – 10:50 Coffee Break**

**10:50 – 11:30** Alex Retzker, The Hebrew University of Jerusalem, Israel  
*Limits on spectral resolution measurements by quantum probes for nano NMR*

**11:30 – 12:10** Vladimir Dyakonov, University of Würzburg, Germany  
*Engineering of highly coherent vacancy spins in SiC*

**12:10 – 13:50 Lunch Break (Restaurant Q1) and Coffee**

**13:50 – 14:30** Viktor Ivády, Wigner Research Centre for Physics, Hungarian Academy of Sciences, Budapest, Hungary  
*Novel ab initio and model spin Hamiltonian methods for spin dynamic simulations of point defect quantum bits*

**Session: Interactions with photons**

***Chair: Ádám Gali***

**14:30 – 15:10** Sophia Economou, Virginia Polytechnic Institute and State University, Blacksburg, Virginia, USA  
*Spin-photon interfaces for graph generation based on defects in diamond and SiC*

**15:10 – 15:50** Michel Bockstedte, University of Salzburg, Austria  
*Spin and photo physics of prototypical defect centers in diamond and SiC*

**15:50 – 16:20 Coffee Break**

**16:20 – 17:00** Brett C. Johnson, The University of Melbourne, Victoria, Australia  
*Silicon carbide single photon source devices*

**17:00 – 17:40** Christoph Becher, Saarland University, Saarbrücken, Germany  
*Spin properties and quantum control of Si vacancy centers in diamond*

**18:40 Bus Pickup to Conference Dinner  
(Venue: Radisson Blu Hotel, Wachtstraße)**

**19:00 – 22:30 Conference Dinner (Restaurant Juergenshof)**

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Thursday, July 12<sup>th</sup> 2018 (House of Science Bremen, Downtown)

- Session: Defect control and qubits**  
**Chair: Tim Wehling**
- 09:00 – 09:40** Nguyen Tien Son, Linköping University, Sweden  
*Electron paramagnetic resonance studies of silicon vacancy in isotopically purified SiC*
- 09:40 – 10:20** Lee C. Bassett, University of Pennsylvania, Philadelphia, USA  
*Optically addressable spin defects in hexagonal boron nitride*
- 10:20 – 10:50** **Coffee Break**  
**Chair: Andreia Luisa da Rosa**
- 10:50 – 11:30** Uwe Gerstmann, Paderborn University, Germany  
*Magneto-optical properties of NV centers in SiC: how relativistic effects trigger spin-based qubits*
- 11:30 – 12:10** Kai-Mei C. Fu, University of Washington, Seattle, USA  
*Shallow impurities in ZnO for quantum information applications*
- 12:10 – 13:50** **Lunch Break (Restaurant Q1) and Coffee**
- 13:50 – 14:30** Hosung Seo, Ajou University, Suwon, South Korea  
*Computational design of new point defects in semiconductors for qubit applications*
- Session: Experimental characterization of interfaces**  
**Chair: Jean-Marie Bluet**
- 14:30 – 15:10** Shengbai Zhang, Rensselaer Polytechnic Institute, Troy, New York, USA  
*Dynamic Jahn -Teller effect of the NV center in diamond and beyond*
- 15:10 - 15:50** Arne Laucht, University of New South Wales, Sydney, Australia  
*Donor spin qubits in Si: from single-shot readout to advanced control methods*
- 17:20** **Poster Mounting**
- 17:30 – 20:30** **Poster Session, Catering Buffet (House of Science)**

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Friday, July 13<sup>th</sup> 2018 (House of Science Bremen, Downtown)

<b>Session:</b>	<b>Quantum emitters</b>
	<b><i>Chair: Edwin Barnes</i></b>
<b>09:00 – 09:40</b>	Igor Aharonovich, University of Technology Sydney, New South Wales, Australia <i>Spectroscopy of single defects in hexagonal boron nitride</i>
<b>09:40 – 10:20</b>	Martin S. Brandt, Technical University of Munich, Garching, Germany <i>Electrical readout of the spin state of NV in diamond</i>
<b>10:20 – 10:50</b>	<b>Coffee Break</b>
<b>10:50 – 11:30</b>	Maciej Koperski, University of Manchester, UK <i>Single photon emitters in various forms of boron nitride</i>
<b>11:30 – 12:10</b>	Audrius Alkauskas, Center for Physical Sciences and Technology, Vilnius, Lithuania <i>Vibrational properties of isolated colour centres in diamond</i>
<b>12:10 – 12:20</b>	<b><i>Closing words: Thomas Frauenheim</i></b>
<b>12:20</b>	<b>Departure</b>