

## Symposium of DFG priority program SPP 1601

### New Frontiers in Sensitivity for EPR Spectroscopy: From Biological Cells to Nano Materials

January 26 - 28, 2015

January 26, 2015

12:00 Get together with sandwich lunch

13:00 Welcome

Marina Bennati, coordinator/ Wolfgang Wachter, DFG

13:15 – 15:15 ***New pulsing schemes***

Thomas Prisner, Frankfurt

Application of amplitude/phase modulated pulses for dipolar EPR spectroscopy

Gunnar Jeschke, Zürich

Ultra-wideband DEER and ESEEM on metal centers

Steffen Glaser, München

Optimal control pulses for electron paramagnetic resonance

Marina Bennati, Göttingen

Sensitivity enhancement and electron nuclear double resonance by pulsed polarization schemes

Martin Brandt, München

New concepts for high-sensitivity pulsed electrically detected magnetic resonance

Boris Naydenov, Ulm

Single spin EPR and NMR with diamond atomic spin sensors

Friedemann Reinhard, München (new application)

Magnetic resonance spectroscopy with high sensitivity and resolution by projection noise limited readout of NV centers

Philipp Neumann, Stuttgart (new application)

3D nanoscale imaging of individual spin labels

15:15 - 15:45 Coffee

15:45 – 17:10 ***New Labels/ In-cell***

Adelheid Godt, Bielefeld

Metal/metal and metal/nitroxyl-labeled compounds for the development of EPR-based distance measurement techniques

Gregor Hagelücken, Bonn

Trityl radicals: New spin labels for nanometer distance measurements with higher sensitivity at room temperature and within cells

Enrica Bordignon, Berlin (new application)  
In-organello and in-cell EPR on orthogonally spin-labeled proteins  
Malte Drescher, Konstanz  
Distance measurements in the nanometer range by in-cell electron paramagnetic resonance spectroscopy

Hans-Jürgen Steinhoff, Osnabrück  
Site-directed spin labeling EPR spectroscopy in vivo

Robert Bittl, Berlin  
In-cell EPR of native paramagnetic protein cofactors

17:10 - 17:30 Break

17:30 – 19:20 **New Hardware**

Dieter Suter, Dortmund  
EPR microresonators

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Broadband EPR in microresonators

Edward Reijerse, Mülheim  
EPR probeheads for very small samples

Andreas Pöppel, Leipzig  
Paramagnetic adsorption sites in microporous crystalline solids studied by electron paramagnetic resonance spectroscopy – from single crystals to oriented thin films

Martin Dressel, Stuttgart (new application)  
High-sensitivity EPR utilizing superconducting planar resonators

Hans Hübl, München (new application)  
Millikelvin EPR- ultra sensitive detection schemes

Jens Anders, Ulm (new application)  
IC-based electron spin detection for biomedical and material science applications

19:20 Poster preparation

20:00 Dinner

January 27, 2015

7:00 - 8:30 Breakfast

8:30 – 9:30 **THz EPR**

Alexander Schnegg, Berlin

Sensitivity improvement in variable very high frequency EPR for applications in catalysis and protein research

Petr Neugebauer, Stuttgart

Improving the sensitivity of THz frequency domain magnetic resonance

Andriy Marko, Frankfurt (new application)

Out-of-phase PELDOR

Sergei Zvyagin, Dresden (new application)

Advanced THz EPR spectroscopy for megagauss science

9:30 – 10:30 **Materials/ Surfaces**

Maurice van Gastel, Mülheim (new application)

In situ EPR spectroscopy applied to catalysts on surfaces. Hydrogen production by bis(biphosphine)nickel complexes and water oxidation by cobalt-oxo cubanes

Thomas Risse Berlin (new application)

Sensitivity enhancement of EPR spectroscopy on single crystalline surfaces under UHV conditions by employing an electrical detection scheme

10:30 - 11:00 Coffee

11:00 – 11:50 **Materials/ Surfaces**

Klaus Lips, Berlin

Spin-dependent transport in fully processed silicon solar cells studied by pulsed multifrequency electrically detected magnetic resonance below 600 MHz / 20 mT and at 263 GHz / 9.4 T

Wolfgang Harneit, Mainz

Electrically detected magnetic resonance on nanoscopic devices

Jan Behrends, Berlin

Transient EDMR: A novel tool to study charge transport in organic solar cells

Kilian Singer, Mainz (new application)

ESR detection of deterministically implanted single phosphorous atoms in silicon

11:50 – 12:30 **Theory**

Uwe Gerstmann, Paderborn

Ab initio calculation of EPR parameters for extended periodic systems – functionalization of surfaces and interfaces

Frank Neese, Mülheim

Development of efficient ab initio methods for the accurate prediction of hyperfine and quadrupole interaction parameters in large molecules

12:30 - 14:00 Lunch

14:00 – 15:00 ***New Detection Schemes***

Vladimir Dyakonov, Würzburg

Electrically detected electron paramagnetic resonance by pulsed charge carrier extraction for application in thin-film solar cell devices

Joris van Slageren, Stuttgart (new application)

Torque-detected electron spin resonance

Martina Havenith, Bochum

Light-induced magnetization detected by force microscopy: from basic concept to first applications

15:00 - 17:00 Poster Session

17:00 Departure Applicants