

# MAGIC<sup>+</sup> WORKSHOP

## Magnetism, Interactions and Complexity

5<sup>th</sup> July 2021

OPENING, CHAIRMEN: ANNA DYRDAŁ & MACIEJ KRAWCZYK

- 09:45-10:00 Workshop Opening
- 10:00-10:50 Opening lecture:  
Topological spin structures - from individual ultrafast motion to diffusion and collective crystallization of 2D lattices  
**Mathias Kläui**  
*Johannes Gutenberg-Universität Mainz, Germany*

SESSION 1, CHAIRMAN: PIOTR KUŚWIK

- 11:00-11:30 Ultra-small zero-field skyrmions in ferromagnetic and synthetic antiferromagnetic multilayers  
**Vincent Cros**  
*Unité Mixte de Physique CNRS/Thales, France*
- 11:30-12:00 2D and 3D topological charges: from magnetic skyrmions to hopfions  
**Konstantin Gusliyenko**  
*UPV-EHU, San Sebastian, Spain*

SESSION 2, CHAIRMAN: OLENA TARTAKIVSKA (*contributed talks*)

- 14:15-14:30 Orbital magnetic moment of magnons  
**Robin R. Neumann** - *Martin Luther University Halle-Wittenberg, Germany*
- 14:30-14:45 Application of thermal and induced skyrmion diffusion in non-conventional computing  
**Maarten A. Brems** - *Institute of Physics, Johannes Gutenberg-Universität Mainz, Germany*
- 14:45-15:00 Spin relaxation in s-wave superconductors & Yu-Shiba-Rusinov states due to resonant spin-flip scatterers  
**Denis Kochan** - *Institute for Theoretical Physics, University of Regensburg, Germany*
- 15:00-15:15 Nonlinear relaxation between magnons and phonons in the external magnetic field  
**Valerij Shklovskij** - *V. Karazin Kharkov National University, Ukraine*
- 15:15-15:30 Anomalous electronic and magnetic properties of noncentrosymmetric  $\text{Yb}(\text{Co},\text{Ni})\text{C}_2$   
**Nikolay M. Chitchev** - *Institute for High Pressure Physics, Moscow, Russia*

SESSION 3, CHAIRMAN: JAROSŁAW W. KŁOS

- 16:00-16:30 Fermi liquid in a two-dimensional electron system with Rashba spin-orbit coupling  
**Vitalii Dugaev**  
*Rzeszów University of Technology, Poland*
- 16:30-17:00 2D relativistic Mott insulators: exotic phase diagram and ultrafast control of spin interactions  
**Alireza Qaiumzadeh**  
*Center for Quantum Spintronics, NTNU, Trondheim, Norway*

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### SESSION 4, CHAIRMAN: MACIEJ KRAWCZYK

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- 10:00-10:30      Dynamics of domain wall and skyrmion in ferrimagnet  
**Teruo Ono**  
*University of Kyoto, Japan*
- 10:30-11:00      Exchange spin waves as probe and tool  
**Philipp Pirro**  
*Technische Universität Kaiserslautern, Germany*
- 11:00-11:30      Spin-orbit torque generation and amplification of spin-waves  
in garnets micro-structures  
**Madjid Anane**  
*Unité Mixte de Physique CNRS/Thales, France*

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### SESSION 5, CHAIRMAN: JANUSZ DUBOWIK (contributed talks)

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- 11:45-12:00      Electric field induced nonlinear modulation of damping constant in CoFeB/MgO  
heterostructures  
**Bivas Rana** - *Adam Mickiewicz University in Poznań, Poland*
- 12:00-12:15      All-optical detection of crystal structure dependent interfacial spin transparency in  
W/CoFeB heterostructures  
**Surya Narayan Panda** - *S. N. Bose National Centre For Basic Sciences, Kolkata, India*
- 12:15-12:30      Strong magnon-magnon coupling in two-dimensional diamond shaped ferromagnetic  
nanodots array  
**Sudip Majumder** - *S. N. Bose National Centre for Basic Sciences, Kolkata, India*
- 12:30-12:45      Tunability of magnon-magnon coupling and spin-wave dissipation  
in synthetic antiferromagnetic multi-layers  
**Aakanksha Sud** - *London Centre for Nanotechnology, University College London, UK*
- 12:45-13:00      Ultrafast magnon dynamics in antiferromagnets  
**Marion M. S. Barbeau** - *Center for Quantum Spintronics, NTNU, Trondheim, Norway*
- 13:00-13:15      Spin-phonon coupling and magnons in layered antiferromagnets  
**Subhadeep Datta** - *School of Physical Sciences, Indian Association for the Cultivation  
of Science, Kolkata, India*

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### POSTER SESSION 15:30 - 17:00

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### SESSION 6, CHAIRMAN: JÓZEF BARNAS

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- 17:30-18:00      PT-symmetric magnonic waveguides  
**Jamal Berakdar**  
*Institut für Physik, Martin-Luther-Universität Halle-Wittenberg, Germany*
- 18:00-18:30      Spin-orbit coupling and magnetic proximity effects in layered heterostructures  
**Martin Gmitra**  
*Institute of Physics, Pavol Jozef Šafárik University in Košice, Slovakia*
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### SESSION 7, CHAIRMAN: ANNA DYRDAŁ

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- 10:00-10:30      **Magnetic skyrmions in new materials**  
**Yan Zhou**  
*The Chinese University of Hong Kong, Shenzhen, China*
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- 10:30-11:00      **Oxide 2-dimensional electron gases for spin-charge interconversion**  
**Manuel Bibes**  
*Unité Mixte de Physique CNRS/Thales, France*
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- 11:00-11:30      **Nonlinear response for spin and charge**  
**Zhen-Gang Zhu**  
*University of Chinese Academy of Sciences*

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### SESSION 8, CHAIRMAN: BIVAS RANA (*contributed talks*)

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- 11:45-12:00      **Rashba effect and spin-charge interconversion in KTaO<sub>3</sub> two-dimensional electron gases**  
**Sara Varotto** - *Unité Mixte de Physique CNRS/Thales, France*
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- 12:00-12:15      **Nonreciprocal transport in ultrathin delafossite PdCoO<sub>2</sub>**  
**Jin Hong Lee** - *Unité Mixte de Physique CNRS/Thales, France*
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- 12:15-12:30      **Discovery and control of room-temperature antiferromagnetic topological textures**  
**Hariom Jani** - *National University of Singapore*
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- 12:30-12:45      **Electrically-controlled crossed Andreev reflection in two-dimensional antiferromagnets**  
**Martin Fønnum Jakobsen** - *Center for Quantum Spintronics NTNU, Norway*
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- 12:45-13:00      **Energy-efficient ultrafast nucleation of single and multiple antiferromagnetic skyrmions using in-plane spin polarized current**  
**Kacho Imtiaz Ali Khan** - *Indian Institute of Technology Delhi, India*

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### SESSION 9, CHAIRMAN: ALIREZA QAIUMZADEH

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- 14:00-14:30      **Parity anomaly related effects in magnetically-doped topological materials**  
**Ewelina Hankiewicz**  
*Julius-Maximilians-Universität Wuerzburg, Germany*
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- 14:30-15:00      **Advances towards efficient and flexible two-dimensional spin circuits**  
**Mutta Venkata Kamalakar**  
*Uppsala University, Sweden*
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- 15:00-15:30      **Level attraction and exceptional points in open cavity magnonic systems**  
**Robert Stamps**  
*University of Manitoba, Kanada*
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- 15:30-15:45      CLOSING SESSION