

# 21. СИМПОЗИЈУМ ФИЗИКЕ КОНДЕНЗОВАНЕ МАТЕРИЈЕ

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## THE 21st SYMPOSIUM ON CONDENSED MATTER PHYSICS



26 - 30 June 2023, Belgrade, Serbia

<https://www.sfkm2023.ipb.ac.rs/>



Institute of Physics  
Belgrade



Vinca Institute of  
Nuclear Sciences



University of Belgrade,  
Faculty of Physics



Serbian Academy of  
Sciences and Arts



Ministry of Science, Technological  
Development and Innovation

# The 21th Symposium on Condensed Matter Physics - SFKM 2023, Belgrade - Serbia

Location: Main Lecture Hall -SASA Building  
Kneza Mihaila 35/II Belgrade, Serbia

Date: 26<sup>th</sup>-30<sup>th</sup> June 2023

## Day 1 – 26<sup>th</sup> June 2023

**9:00 — 9:15** Conference opening

*Chair* *Zorica Konstantinović*

**9:15 — 09:45** Spin phenomena in van der Waals heterostructures J. Fabian

**09:45 — 10:15** Spin injection and spin-charge conversion processes in all-oxide heterostructures B. Martinez

**10:15 — 10:45** What is quantum spin torque: Spintronics meets nonequilibrium strongly correlated and long-range entangled quantum matter B. Nikolić

**10:45 – 11:00** Proximity Induced Spin-Orbit Coupling In Phosphorene/WSe<sub>2</sub> and WSe<sub>2</sub>/Phosphorene/WSe<sub>2</sub> van der Waals heterostructures M. Milivojević

**11:00 — 11:20** Coffee break

***Chair******Zoran Popović***

<b>11:20 — 11:50</b>	TBA	W. Ku
<b>11:50 – 12:20</b>	Spontaneous superconducting vortex induced by stray field of skyrmion in Chiral Magnet-Superconductor Heterostructures	X. Qiu
<b>12:20 — 12:35</b>	The Anisotropic Interlayer Exchange In Van Der Waals 2D Magnets	S. Stavrić
<b>12:35 – 12:50</b>	Charge To Spin Conversion In Graphene On 1T-TaS2 Monolayer Triggered By Charge Density Wave Proximity Effects	M. Gmitra
<b>12:50 – 13:05</b>	Ion-atom interaction potential dependence on the ion's charge exchange	N. Starčević
<b>13:05 — 14:30</b>	Lunch break	

***Chair******Jelena Pešić***

<b>14:30 — 15:00</b>	The Ultrafast Thermodynamics Of Graphene And Twisted Bilayer Graphene	K.-J. Tielrooij
<b>15:00 — 15:30</b>	Exploring Functional Properties Of Two Dimensional Materials By Atomic Force Microscopy	B. Vasić

<b>15:30 — 15:45</b>	Unmovable Nodal Points and Lines in Two- Dimensional Materials: Dispersions and Positions in the Reciprocal Space	V. Damljanović
<b>15:45 — 16:00</b>	Solving the puzzle of magnetic 2D materials – from electronic structure to magnetic interactions	D. Šabani
<b>16:00 — 16:30</b>	Graphene For Physiological Parameter Sensing	M. Spasenović
<b>16:30 – 16:50</b>	Coffee break	
<b>16:50 – 18:50</b>	<b>Round table discussion</b> <i>Discussion will be held in the Serbian language</i>	

## Day 2 – 27<sup>th</sup> June 2023

*Chair*

***Darko Tanasković***

<b>9:00 — 9:30</b>	Many-body localization: wanted dead or alive - from random to quasiperiodic systems	P. Prelovšek
<b>9:30 — 10:00</b>	Nonequilibrium transport and thermalization in strongly disordered 2D electron systems	D. Popović
<b>10:00— 10:30</b>	Dipole representation of half-filled Landau level	M. Milovanović

<b>10:30— 10:45</b>	Cumulant Expansion in the Holstein model: Spectral Functions and Mobility	P. Mitrić
<b>10:45 – 11:00</b>	Observation of many-body scarring in a Bose-Hubbard quantum simulator	A. Hudomal
<b>11:00 — 11:20</b>	Coffee break	
<i>Chair</i>	<i>Vladimir Dobrosavljević</i>	
<b>11:20 — 11:50</b>	Time reversal symmetry breaking and Bogoliubov-Fermi surfaces in multiband superconductors	I. Herbut
<b>11:50 — 12:20</b>	Disorder in FeSe <sub>1-x</sub> S <sub>x</sub> ( $0 \leq x \leq 1$ ) superconducting crystals	C. Petrovic
<b>12:20 — 12:50</b>	Probing charge density wave phases and the Mott transition in 1T-TaS <sub>2</sub> by Raman scattering	N. Lazarević
<b>12:50 — 13:05</b>	Uniaxial strain-induced changes in vibrational modes of FeSe	J. Pešić
<b>13:05— 14:30</b>	Lunch break	
<i>Chair</i>	<i>Cedomir Petrovic</i>	
<b>14:30 — 15:00</b>	Surprises in transition metal dichalcogenides revealed by interlayer charge transport	L. Forro

<b>15:00 — 15:30</b>	Superconductivity and Charge-Density-Wave in Kagome Metal CsV <sub>3</sub> Sb <sub>5</sub> Revealed by NMR measurement	J. Luo
<b>15:30 — 15:45</b>	Evolution of Lattice, Spin, and Charge Properties Across FeSe <sub>1-x</sub> S <sub>x</sub> Phase Diagram	A. Milosavljević
<b>15:45 — 16:00</b>	Exploring superconductivity in doped mono- and bilayer borophenes	B. Šoškić
<b>16:00 – 16:30</b>	Raman Studies of Kagome Lattice Systems	R. Hackl
<b>16:30 — 16:50</b>	Coffee break	
<b>16:50 – 17:15</b>	<i>Chair Bojana Višić</i>	<i>Poster presentations</i>
<b>17:15 — 19:00</b>	POSTER SESSION	

## Day 3 – 28<sup>th</sup> June 2023

*Chair*

*Zoran Ivić*

<b>9:00 – 9:15</b>	In memoriam: Leonardo Golubović	
<b>9:15 — 9:45</b>	On The Effects Of Finite Rate Driving On Disordered Magnetic Systems	Đ. Spasojević

<b>9:45 — 10:15</b>	Collective dynamics of social systems: a statistical physics approach	M. Mitrović Dankulov
<b>10:15— 10:45</b>	Calcium-A life and death signal	M. Satarić
<b>10:45— 11:00</b>	Spin Activity Correlations in Driven Disordered Systems	D. Jovković
<b>11:00— 11:15</b>	Higher-order Connectivity Patterns in the Correlation Structure of Complex Systems	S. Maletić
<b>11:15— 11:35</b>	Coffee break	
<i>Chair</i>	<i>Željko Šljivančanin</i>	
<b>11:35 — 12:05</b>	From magnonics to neuromorphic computing in magnetic 2D materials	M. Milošević
<b>12:05 — 12:35</b>	The Evolution of Topological Magnetism in the Two-Dimensional Limit	G. Eres
<b>12:35 — 13:05</b>	Phyllosilicates as a platform for air-stable 2D magnetism	C. Teichert
<b>13:05 — 13:35</b>	Rare earth spin frustrated systems	Q. Zhang
<b>13:35 — 22:00</b>	Lunch break + Conference Excursion + Conference Diner	

## Day 4 – 29<sup>th</sup> June 2023

*Chair*

*Stevan Nad-Perge*

<b>9:00 — 9:30</b>	Prediction of 1st order Phase Transition with Electron-Phonon Coupling	K. Hingerl
<b>9:30 — 10:00</b>	Tuning Phases and Physical Properties of RENiO <sub>3</sub>	M. Radović
<b>10:00 — 10:30</b>	Binary Oxides and Ferroelectricity: Ab-initio Insights Into The Polar-state Formation And Its Switching	M. Ležaić
<b>10:30 — 10:45</b>	Analysis Of Two-Dimensional Crystals Via Rainbow Scattering	M. Hadžijojić
<b>10:45 - 11:00</b>	MoxWx-1S2 Nanotubes For Advanced Field Emission Application	B. Višić
<b>11:00 — 11:20</b>	Coffee break	

*Chair*

*Igor Herbut*

<b>11:20 — 11:50</b>	Mott quantum critical phase of FeO dominates Earth's lower mantle	V. Dobrosavljević
<b>11:50 — 12:20</b>	Spectral Functions and Mobility of the Holstein Polaron	D. Tanasković



<b>12:20 — 12:50</b>	Nanostructure View Of Electronic Transitions In Selected Van Der Waals Quantum Materials	E. Božin
<b>12:50— 14:30</b>	Lunch break	
<i>Chair</i>	<i>Nenad Vukmirović</i>	
<b>14:30 — 15:00</b>	Group-IV SiGeSn Alloys For Photonics and Electronics – Recent Progress	Z. Ikonić
<b>15:00 — 15:30</b>	Effect of Large Quantum Correlations in “Russian Doll” Quantum Dots: Impact on MEG Solar Cells	S. Tomić
<b>15:30 — 15:45</b>	A Nonequilibrium- Thermodynamics Perspective on Charge Separation in Organic Solar Cells	V. Janković
<b>15:45— 16:00</b>	Soft Cluster Crystals in Simulation and Experiment	N.Adžić
<b>16:00— 16:30</b>	How Can We Benefit From The Optical Properties Of Mn <sup>5+</sup> To Make Pigments And Near- Infrared Phosphors?	M. Dramićanin
<b>16:30 — 16:50</b>	Coffee break	

***Chair******Stanko Tomić***

<b>16:50 — 17:20</b>	Fabrication hybrid Janus nanoparticles and their application as light-driven micromotors	V. Đoković
<b>17:20 – 17:50</b>	Designing of a “perfect” porphyrin molecule for the Mechanically Controllable Break Junction Experiments	D. Dulić
<b>17:50 — 18:05</b>	Single-Molecule Probing By Rectification in a Nanogap	R. Žikić

**Day 5 – 30<sup>th</sup> June 2023*****Chair******Dragana Popović***

<b>9:00 — 9:30</b>	TBA	M. Drndić
<b>9:30 — 10:00</b>	Efficient Photon and Phonon Interfaces for Spin Qubits in Diamond	M. Lončar
<b>10:00— 10:30</b>	Stability of vortices in dipolar droplets	A. Balaž
<b>10:30— 11:00</b>	On the Theoretical Description of Photon Bose-Einstein Condensates	A. Pelster
<b>11:00 — 11:20</b>	Coffee break	

## Special session: Celebrating Milan Damnjanović's 70th Birthday Jubilee

<i>Chair</i>	<i>Časlav Brukner</i>	
<b>11:20 - 11:30</b>	TBA	I. Božović
<b>11:30 — 12:00</b>	Topological States in Layered Transition Metal Dichalcogenides	I. Milošević
<b>12:00 — 12:30</b>	Superconductivity, Topology and Correlations In Twisted And Untwisted Graphene Structures	S. Nadj-Perge
<b>12:30 — 13:00</b>	Excitons and phonons in van-der-Waals 2D materials	J. Maultzsch
<b>13:00 — 13:30</b>	Finding Useful Metastable Materials – New Perspectives on an Old Problem	V. Stevanović
<b>13:30- 14:30</b>	Lunch break and social event in SASA club	
<i>Chair</i>	<i>Janina Maultzsch</i>	
<b>14:30 - 15:00</b>	Crystal Closed Shell	M. Damnjanović
<b>15:00 – 15:30</b>	Quantum Reference Frames: what they are and what they're good for	Č. Brukner
<b>15:30 - 16:00</b>	Reconstruction of Quantum Particle Statistics: Fermions, Bosons and Beyond	B. Dakić

<b>16:00 – 16:30</b>	Physics and Geometry Beyond the Limits of Uncertainty Relations	M. Djurdjevic
<b>16:30 – 16:35</b>	Conference closing	