2024 SYMPOSIUM

on

Advanced Functional Materials for Quantum Electronics and Superconductivity

Organized By：

- **School of Physics, Beijing Institute of Technology (BIT)**
- **Center for Advanced Mesoscience and Nanotechnology (MIPT)**

July 18-21, 2024

SIMPOSIUM PROGRAM

July 18-21, 2024, BIT, Beijing, China

Thursday, July 18, 2024 **Location: Beijing Northern Spring Conference Center**		
10:00-18:00	Conference Check-in and Registration	
18:00-19:30	Welcome Reception	
Friday, July 19, 2024 **Location: Industry Ecological Building, Room 118**		
Session Chair: Jia-Fang Li		
9:00-9:05	Opening Ceremony	
9:05-9:10	Yang Gao	Introduction to BIT
9:10-9:20	Jia-Fang Li	Introduction to School of Physics
9:20-9:50	Alexander Golubov	Supercurrent Reversal in Zeeman-Split Josephson Junctions
9:50-10:00	Coffee Break & Take Photos	
10:00-10:30	Dong-Fei Wang	On the Pursuit of Majorana Fermion in Fe (Te,Se)
10:30-11:00	Vasily Stolyarov	Josephson Vortex-Based Memory
Session Chair: Alexander Golubov		
11:00-11:30	Irina Bobkova	Controllable Proximity Effects in Superconductor/ferromagnet van der Waals Heterostructures
11:30-12:00	Sheng-Shan Qin	Topological Superconductivity from Unconventional Band Degeneracy with Conventional

		Pairing
Lunch at Dining Hall		
Session Chair: Wei Jiang		
14:00-14:30	Aleksandr Bobkov	Magnetoelectric Effects in Superconductor/ferromagnet/Superconductor Josephson Junctions
14:30-15:00	Quan-Zhen Zhang	Construction of novel 2D heterostructures and the electronic states investigation
15:00-15:30	Jun-Xi Duan	Second-order nonlinear transport and its modulation
15:30-15:40	Coffee Break	
Session Chair: Vasily Stolyarov		
15:40-16:10	Vadim Grinenko	Multicomponent superconductivity and four-fermion phase in the $Ba_{1-x}K_xFe_2As_2$ system
16:10-16:40	Yu Zhang	Construction and manipulation of correlated electronic states in $NbSe_2$
16:40-16:55	Grigorii Bobkov	Spin supercurrent in superconductor/ferromagnet van-der-Waals heterostructures
17:10-17:25	Si-Li Wu	Josephson diode effect in topological insulator BiSb/$TeSe_2$
17:25-17:40	Peng Zhu	Crystal growth of topological quantum materials and their superconductivity induced by high pressure
18:00-19:30 Buffet at Dining Hall		
Saturday, July 20, 2024 **Location: Physical Experiment Center, Room 229**		

Session Chair: Irina Bobkova		
9:00-9:30	Anatolii Sidorenko	Superconducting Base Elements for Artificial Neural Networks
9:30-10:00	Gang Wang	Nonlinear optical and phonon properties of $NbOX_2$
10:00-10:30	Jiang-Wei Shang	Estimating Many Properties of a Quantum State *via* Quantum Reservoir Processing
10:30-10:50	Coffee Break	
Session Chair: Jiang-Wei Shang		
10:50-11:20	Aleksei Vagov	Intertype Superconductivity in Ferromagnetic and Multi-Band Superconductors
11:20-11:50	Jun-Feng Han	Modulation of edge states of two-dimensional topological material Bi_4Br_4 thin films for infrared application
Lunch at Dining Hall		
Session Chair: Zhi-Wei Wang		
14:00-14:30	Aleksandr Frolov	Magnetic Topological Insulators: A Case Study of $Ge_xMn_{1-x}Bi_2Te_4$
14:30-15:00	Tian Chen	The Dynamic Control Around Exceptional Points
15:00-15:30	Di Zhou	From Soft Matter to Topological Mechanical Metamaterials
15:30-15:40	Coffee Break	
Session Chair: Aleksandr Bobkov		
15:40-16:10	Lada Yashina	Crystal Growth and Characterization of Complex Topological Insulators
16:10-16:40	Mikhail Talanov	Geometrically frustrated ferroelectrics and relaxors

16:40-16:55	Anastasiia Ianovskaia	Magnetic proximity effect in superconductor/ferromagnet van der Waals heterostructures: dependence on the number of superconducting monolayers
16:55-17:10	Yao-Yao Chen	Visualization of Confined Electrons at Grain Boundaries in a Monolayer CDW Metal
17:10-17:50	Poster Session	
18:00-19:30 Buffet at Dining Hall		

Sunday, July 21, 2024 Building: Physical Experiment Center, Room 229		
Session Chair: Jia-Hua Duan		
9:00-9:30	Boris Gorshunov	Terahertz spectroscopy as a probe for low-energy phenomena in nano-systems
9:30-10:00	Ye-Liang Wang	Reversible Switching of Chiral CDW Superlattices and the Stacking Electronic Behaviors
10:00-10:30	Chong Wang	Hyperbolic plasmons in anisotropic 2D films
10:30-10:50	Coffee Break	
Session Chair: Boris Gorshunov		
10:50-11:20	Alexey Aladyshkin	Visualization of Atomic Structures on Stepped, Faceted and Non-flat Surfaces by Difference-of-Gaussians Approach
11:20-11:50	Meng-Xue Guan	First-principles Simulations of Ultrafast Phase Transition in Condensed-Matter Systems
Lunch at Dining Hall		
Session Chair: Alexey Aladyshkin **Tencent Meeting: 222 550 140 Password: 240720**		
14:00-14:30	Feng Li	Topological acoustic/elastic metamaterials and programmable photoacoustic manipulation
14:30-15:00 Moscow Time: 9:30-10:00	Alexander Baryshev (On-line)	I In-situ ellipsometric study of WO_{3-x}: retrieval of dielectric permittivity during the redox reaction
15:00-15:30 Moscow Time:	Konstantin Motovilov	The Hydration-induced Pancake Bonding in Melanins

10:00-10:30	(On-line)	
15:30-15:40	Coffee Break	
15:40-16:10 Moscow Time: 10:40-11:10	Denis Vyalikh (On-line)	ARPES on strongly correlated 4f materials: Unveiling novel temperature scales at their surfaces
16:10-16:40 Moscow Time: 11:10-11:40	Dmitriy Usachev (On-line)	Electronic structure and magnetism of La compounds probed by photoemission
16:40-16:55	Jin-Jin Liu	Crystal growth and manipulation on Kagome superconductors AV_3Sb_5
16:55-17:10	Liang-Guang Jia	Colossal structural distortion and interlayer-coupling suppression in a vdW crystal induced by atomic vacancies
Closing Ceremony		

Poster Session

Saturday, July 20, 2024 **Time：17:10-17:55；Location: Physical Experiment Center, Room 229**	
Poster Session Chair: Jia-Hua Duan	
Valeriia Gordeeva	Spin-valve effect and parity effect in AF/S/AF systems
Semen Larionov	Magnetic force microscopy of superconducting structures
Artem Solovev	Quantum enhanced magnetometry on a transmon qutrit based on phase estimation algorithm
Radik Tyumenev	Microwave generator based on the Josephson Junction
Liu Yang	Crystal growth and physical properties of quantum materials
Hong-Yu Zhang	Topological Photonic Chiral Mode Converters
Yan-Ji Zheng	Topological rainbow induced by gauge fields
Wen Zhao	Topological rainbow lasers based on synthetic dimensions
Min-Na Zhang	Room-temperature self-cavity lasing from organic color centers
Yu-Jiu Jiang	Research on Electrochemical Biosensors Based on Topological Materials
Lin Zhou	Drop-coated Bi_2Se_3 Electrode for Hydrogen Evolution Reaction
Jiang-Yue Bai	Electrochemical biosensor for sensitive detection of SARS-CoV-2 gene fragments using topological material
Shi-Qi Xu	Molecular Beam Epitaxy growth of Topological Insulator Bi_4Br_4 on Silicon for the Infrared Applications

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