CONFERENCE PROGRAMME

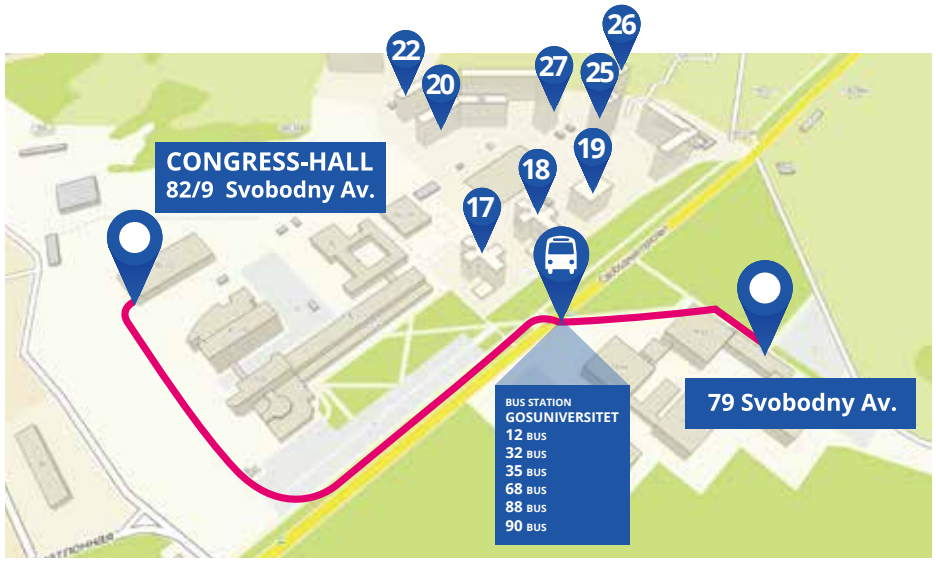
EASTMAG-2016

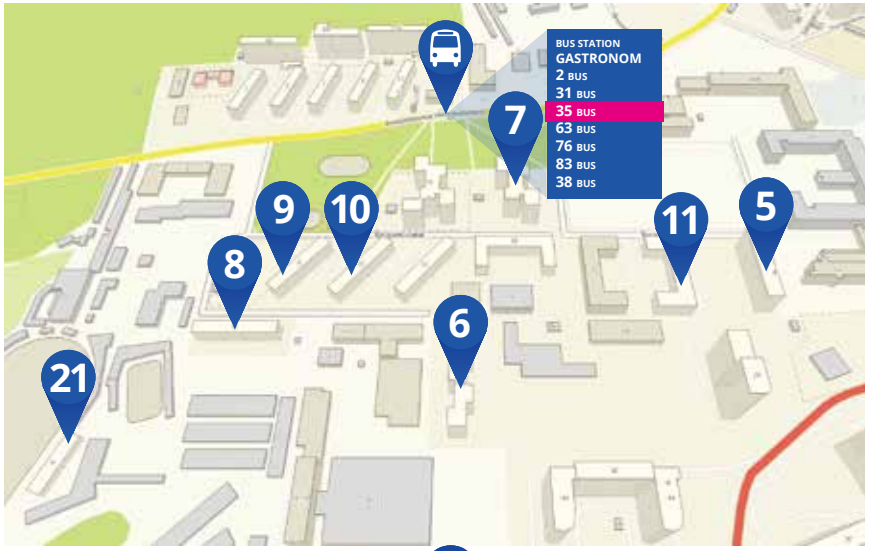
VI Euro-Asian Symposium "Trends in MAGnetism"

August 15-19, 2016, Krasnoyarsk, Russia

EASTMAG-2016

Siberian Federal University Campus





- *dormitory numbers*

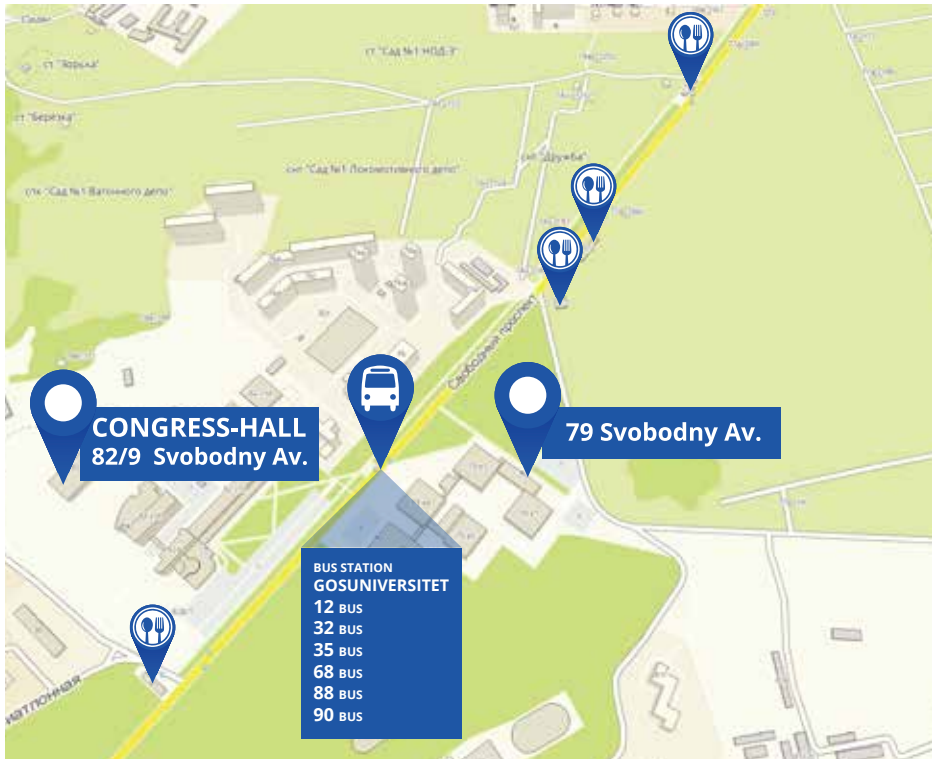
*The easiest ways to get to the University and back to the hotels and dormitories is to take a bus (**12, 32, 35, 12, 88, 90**) or taxi.*

*For example, there is a cheap taxi company «Maxim» (approximately 200 Rub from the city centre to Siberian Federal University). It can be called by phone number **+7 (391) 252 99 99**. You have to say the address where you are and the address where to go. The exact price is announced immediately. As soon as taxi arrives you get SMS about it.*

*The bus routes **12, 32, 68, 88, 90** can be used to get to the city centre hotels (bus station "Lokomotiv", "Technologicheskaya academia", "Perensona") and back to the University (bus station "GosUniversitet"). The bus route 88 is not preferable as it takes more than an hour to get to the city centre. The bus route **35** connects two parts of the University campus and is helpful for those who stay in dormitories.*

EASTMAG-2016

Fast food restaurants and cafes



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Day 0. 14.08

PROGRAMME

15.00 – 19.00	**PRELIMINARY REGISTRATION**	79 Svobodny Av., hall of the Bld.1

Day 1. 15.08

PROGRAMME

9.00 – 13.00	**REGISTRATION**	79 Svobodny Av., hall of the Bld.1
9.30 – 12.30	**CITY BUS TOUR**	79/1 Svobodny Av.
12.30 – 13.30	**LUNCH**	79 Svobodny Av.
13.30 – 13.40	**OPENING**	Congress-hall, 82/9 Svobodny Av.
13.40 – 15.40	Session 1.15. **PLENARY TALKS**	Congress-hall, 82/9 Svobodny Av.
15.40 – 16.30	**COFFEE BREAK**	79 Svobodny Av., hall of the Bld.1
16.30 – 18.55	Session 2.15. **SECTION 1. Fundamental magnetic properties**	**Room A**
	Session 3.15. **SECTION 8. Magnonics**	**Room B**
	Session 4.15. **SECTION 10. Low dimensional magnetism and nanostructured materials**	**Room C**
19.00	**WELCOME PARTY**	79 Svobodny Av., hall of the Bld.1
20.30	**BUS TRANSFER TO THE CITY CENTRE HOTELS**	

Session 1.15
PLENARY TALKS

CONGRESS – HALL, 82/9 SVOBODNY AV.

Chairman
S. Ovchinnikov

13.40–14.20 | **Pl1**

***S.Maekawa* – Spin Mechatronics: Mechanical Generation of Spin Current**

We introduce mechanical effects in spintronics and propose a variety of novel spintronics phenomena.

The mechanical generation of spin and spin current opens a door from «Spintronics» to «Spin-Mechatronics».

14.20–15.00 | **Pl2**

***A.Rogalev* – X-ray magnetic circular dichroism: unique probe of magnetism**

Because of their inherent element and orbital specificity and ability to probe extremely small sample volumes, XMCD has now became a workhorse technique in magnetism research leading to a deeper understanding of the microscopic origin of magnetic state of matter, as well as to major technological advances.

15.00–15.40 | **Pl3**

***A.Saranin* – Spin-split metallic surface states of 2D alloys and compounds on silicon**

Session 2.15
SECTION 8. Magnonics

ROOM A

Chairman
N. Mushnikov

16.30–16.55 | **I1.1**

***E.Chulkov* – Magnetic effects in topological insulators**

Here we present and discuss recent results of the study of magnetic and nonmagnetic impurities as well as magnetic proximity effects on electronic and spin structure of TIs and splitting of the topological surface state. We also analyze magnetic effects in two-dimensional topological insulators and recent results for quantum anomalous Hall effect.

16.55–17.20 | **I1.2**

***J. Bonca* – Relaxation and thermalization in many-body systems coupled to different bosonic degrees of freedom**

In the first part I will briefly overview a fundamental study of the relaxation dynamics of a single hole in the two dimensional t-J model initially excited by a strong quench. In the second part I will discuss the primary relaxation process of a photo excited charge carrier coupled to quantum Einstein phonons.

17.20–17.45 | **I1.3**

***A.Smirnov* – Magnetic resonance of spinons in S=1/2 quantum magnets**

We describe electron spin resonance experiments in S=1/2 antiferromagnets $K_2CuSO_4Br_2$ and Cs_2CuCl_4 with a chain-like structure of exchange bonds. We observe a specific low-temperature spin resonance mode, which appears due to the modification of the two-spinon continuum of excitations of a 1D spin chain under the action of a uniform Dzyaloshinski-Moriya interaction.

17.45–18.10 — I1.4

***I.Nekrasov* – Investigation of Magnetocaloric effect in Strongly Correlated Metallic Systems**

In this work we systematically investigated change of entropy DS within magnetocaloric effect for ferromagnetic strongly correlated metallic systems. It was done in the frame of single band Hubbard model. Also magnetocaloric change of entropy DS was investigated within dynamical mean-field theory (DMFT).

18.10–18.25 — O1.1

***I.Nazarenko* – $Ni_5GeB_2O_{10}$ Magnetic Properties Theoretical Study**

For $Ni_5Ge(BO_5)_2$ magnetic structures analysis and superexchange interactions estimation, a simple indirect coupling model based on the theory of the super-exchange interaction was applied. According to calculated values of superexchange integrals, two magnetic structures were proposed.

18.25–18.40 — O1.2

***Z.Gareeva* – Magnetoelectricity of domain walls of rare-earth iron garnets**

We report a new mechanism of magnetoelectric effect in rare earth iron garnets related to low symmetry rare earth ions environment and the presence of domain walls of the iron subsystem. A hallmark of this effect is that magnetoelectricity is independent of the type of magnetic domain walls.

18.40 – 18.55 — O1.3.

***Ju.Siryuk* – The hexagonal lattice of spiral domains in ferrite-garnet films**

Session 3.15

SECTION 8 Magnonics

ROOM B

Chairman

A. Pankrats

16.30–16.55 — I8.1

***H.Munekata* – New functional photonic materials and devices based on magnetism**

Digital information technology has great impact on our lives, which has strongly motivated scientists to look for faster and more energy-efficient ways to process streams of digital signals. This presentation reviews some works carried out recently in my group; namely, (i) devices for circular polarized light (CPL) technology and (ii) all-optical three-terminal devices.

16.55–17.20 — I8.2

***V.Kruglyak* – Excitation and guiding of propagating spin waves in media with graded magnonic index**

Non-uniformities in the effective field and magnetisation configurations enable guiding and steering of spin waves in a deliberate manner and therefore represent landscapes of graded refractive index (graded magnonic index), the studies of spin waves in graded magnonic landscapes can be united under the umbrella of the graded-index magnonics theme and will be reviewed in this talk.

17.20–17.45 — I8.3.

***J.Xiao* – Magnetic wafer based magnonics**

Using magnetic domain walls as spin wave bus, we propose evolvable hardware architecture for building spin wave integrated circuitry,

and ultimately a spin wave computer. Upon this, a spin wave diode component that transmits spin wave uni-direction way is constructed.

17.45–18.10

I8.4

***Yu.Filimonov* – Wood resonances in 1D magnonic crystals**

In this work we present results of experimental and numerical investigation of new type resonant phenomena in YIG epitaxial films with the surface microstructure in the form of magnonic crystal (MC) appearing during spin wave (SW) propagation with the wavelength λ considerably exceeding the MC period Λ

18.10–18.25

O8.1

***V.Bessonov* – The properties of propagating surface magnetostatic spin waves in 1D magnonic crystal**

The magnonic band gaps in two types of the planar one-dimensional magnonic crystals comprised of the periodic array of the metallic stripes on yttrium iron garnet (YIG) film and YIG film with an array of grooves was analyzed experimentally and theoretically.

18.25–18.40

O8.2

***A.Sharaevskaya* – Formation of band gaps in layered structure based on magnonic crystal -ferromagnetic film**

In present report based on theoretically and experimentally results we study features of formation band gaps in structure based on coupled 1D YIG MC and ferroelectric YIG film, separated by a dielectric layer and main features of formation band gaps identified.

18.40–18.55

O8.3

***S.Osokin* – Resonant transfer of spin-waves in a finite array of magnetic inclusions embedded into a ferromagnetic film**

Propagation of spin-waves array of magnetic inclusions embedded into a ferromagnetic film is considered. We provide an analytical study of the inclusion finite array excitation by forward volume magnetoscatic spin-waves in metallized thin-film matrix.

Session 4.15

SECTION 10
Low dimensional magnetism and nanostructured materials

ROOM C

Chairman

J. Rubin

16.30–16.55

I10.1

***A. Fraerman* – Magnetocaloric effect and exchange interaction in ferromagnet/ paramagnet multilayer structures**

In recent years, the interest to magnetocaloric effect has been stimulated by the possibility of developing "magnetic refrigerators". Our work is aimed at the study of the magnetocaloric effect in multilayer structures, where the magnetization is determined by the "proximity" effect related to the exchange interaction between different magnetic layers.

16.55–17.20 | **I10.2**

***S.Komogortsev* – Exchange stiffness in nanocrystalline ferromagnetic alloys determined by approaching to saturation**

We demonstrate new approach to the estimation of the exchange stiffness from approach magnetization to saturation curve of nanocrystalline alloy. Using this technique and law temperature spin wave excitations (Bloch's law T3/2) we estimate the exchange stiffness between crystallites and volume-averaged exchange over the whole sample in nanostructured alloys and nanocomposite films.

17.20–17.45 | **I10.3**

***A. Rinkevich* – Resonance phenomena in magnetic metamaterials**

Resonance phenomena in 3D opal-based metamaterials containing particles of metals, ferrite-spinels and garnets are studied by investigations of the frequency and magnetic field dependences of the transmission and reflection coefficients at the millimeter waveband. The real part of the refraction coefficient is found to be mostly positive, and the metamaterial is not a double left handed media.

17.45–18.10 | **I10.4**

***A.Samardak* – First order reversal curves method for detailed analysis of magnetic properties of magnetostatically coupled nanostructures**

We present recent results of our study of a few magnetic systems in order to demonstrate performance capabilities of the first order reversal curves (FORC) method. For instance, we will show an applicability of the FORC method for CoNi binary alloy nanowire arrays fabricated with alumina template–assisted electrodeposition and for single crystal Co nanostripe arrays grown by molecular beam epitaxy.

18.10–18.25 | **O10.1**

***V. Felk* – Micromagnetics in planar system with random magnetic anisotropy and two-dimensional magnetic correlations**

Magnetic layers are important part of many planar structures in nanoelectronics. Micromagnetic modeling is an effective approach to solve this problem. We report on new interesting results obtained by micromagnetic simulation of nanolayer with two-dimensional magnetic correlations, using package OOMMF. We have identified the main types of defects and study their behavior.

18.25–18.40 | **O10.2**

***M. Sapozhnikov* – Artificial dense lattice of magnetic skyrmionic bubbles in Co/Pt multilayers**

18.40–18.55 | **O10.3**

***V.Suslyaev* – Effect of radiation-thermal treatment on morphological and electromagnetic characteristics of the synthesized by SHS nanostructured hexaferrite $BaCo_{0.7}Zn_{1.3}Fe_{16}O_{27}$.**

Day 2. 16.08

PROGRAMME

8.15	**TRANSFER FROM THE CITY CENTRE HOTELS**	
9.00 – 11.10	**PLENARY TALKS**	Congress-hall, 82/9 Svobodny
11.10 – 11.50	**COFFEE BREAK**	79 Svobodny Av., hall of the Bld.1
11.50 – 13.30	Session 2.16 **SECTION 1. Fundamental magnetic properties**	**Room A**
	Session 3.16 **SECTION 4. Transport phenomena and spin electronics**	**Room B**
	Session 4.16 **SECTION 10. Low dimensional magnetism and nanostructured materials**	**Room C**
13.30 – 14.30	**LUNCH**	
14.30 – 17.00	Session 5.16 **SECTION 1. Fundamental magnetic properties**	**Room A**
	Session 6.16 **SECTION 4. Transport phenomena and spin electronics**	**Room B**
	Session 7.16 **SECTION 10. Low dimensional magnetism and nanostructured materials**	**Room C**
17.00 – 17.20	**COFFEE BREAK**	79 Svobodny Av., hall of the Bld.1
17.20 – 18.50	Session 8.16 **SECTION 1. Fundamental magnetic properties**	**Room A**
	Session 9.16 **SECTION 7. Ultrafast magnetism**	**Room B**
	Session 10.16 **SECTION 10. Low dimensional magnetism and nanostructured materials**	**Room C**
18.30 – 21.00	**POSTER SESSION 1** **P1.1- P1.52, P4.1-P4.12, P7.1-P7.3, P8.1-P8.6, P12.1-P12.6**	79 Svobodny Av., hall of the Bld.1. *Chairman V.Gavrichkov*
21.00	**BUS TRANSFER TO THE CITY CENTRE HOTELS**	

Session 1.16
PLENARY TALKS

CONGRESS – HALL, 82/9 SVOBODNY AV.

Chairman
A. Saranin

9.00–9.40 — Pl4

***M. Farle* – Skyrmion magnetism in confined geometries**

The magnetism of materials with Dzyaloshinskii-Moriya interaction in confined geometries will be discussed. Magnetic induction maps visualizing the size and shape of skyrmions in laterally confined FeGe lamella will be presented. Transitions from the helical to the skyrmion phase as a function of temperature and magnetic field will be shown.

9.40–10.20 — Pl5

***A. Kimel* – All-optical magnetization reversal with femtosecond laser pulses: the role of interfaces**

I will review the progress in understanding of the ultrafast laser-induced spin dynamics in metallic alloys and multilayers highlighting the strengths and weaknesses of the first theoretical models for the helicity-dependent all-optical magnetic switching. Referring to our experiments in X-ray, visible and THz spectral ranges I will argue that the interfacial and/or intersublattice exchange interactions as well as interfacial spin orbit interaction do play in the optical control of magnetism a decisive role.

10.20–11.00 — Pl6

R.Cowburn – Synthetic magnetic liquids for biotechnology applications

Applications of magnetic nanoparticles in biotechnology are discussed.

Session 2.16.
SECTION 1 Fundamental magnetic properties

ROOM A

Chairman
A. Smirnov

11.50.–12.15 — I1.5

***A.Pyatakov* – Magnetoelectricity in topological magnetic textures and micromagnetism**

The magnetoelectric phenomena observed in epitaxial iron garnet films, such as electrically induced displacement and tilting of domain boundaries are reported. The report also presents the results of micromagnetic simulations of the electric field effect on other topological defects in magnetically ordered media such as Bloch points at domain boundaries, magnetic vortices, and skyrmions.

12.15–12.40 — I1.6

***V. Ignatchenko* – Self-consistent approximation: development and application to the problem of wave propagation in inhomogeneous media**

Self-consistent approximation (SCA) of a higher level compared to the standard SCA is derived taking into account both the first and second terms of the series for the vertex function. Comparison of the new and standard SCA has been carried out for the problem of the Green's function of scalar waves in inhomogeneous media.

12.40–12.55 — O1.4

***A.Dubrovskiy* – The magnetostriction effect in the bilayered manganites single crystals**

The nature of metamagnetic transition in bilayered manganites single crystals was investigated with magnetostriction measurements. It was shown, that the chemical pressure effect is responsible for this phenomenon rather than the rare earth ion magnetism.

12.55–13.10 — O1.5

***A.Akhmetova* – Some aspects of magnetization reversal processes of nanoscale permalloy films with surface roughness**

The paper theoretically analyzes the domain structure and its transformation in a planar magnetic field observed experimentally in nano-scale permalloy films which serve as a control layer in heterostructures. The expression obtained for full energy has the form which is acceptable for using OOMMF software.

13.10–13.25 — O1.6

***N. Kostyuchenko* – $TmFe_{11}Ti$ Rare-Earth Intermetallic in High Magnetic Fields: Experiment and Theory**

We have performed an experimental study of the magnetization in a single-crystal of $TmFe_{11}T$ in fields up to 60 T at 4.2 K have been done along the [001] and [100] crystallographic axes. The magnetization curves for $TmFe_{11}Ti$ were treated theoretically. Calculations of the crystal field and exchange interaction parameters have been performed.

Session 3.16.

SECTION 4
Transport phenomena and spin electronics

ROOM B

Chairman
S. Ovchinnikov

11.50–12.15 — I4.1

***V.Ustinov* – Electric detection of spin injection in lateral spin valves**

Non-linear theory of the spin transport across the interface of ferromagnet (F) and normal conductor (N) in the framework of two-current model is represented. Local spin-dependent conductivities and diffusion coefficients are calculated for arbitrary dispersion low of conduction electrons as the functional of spin density.

12.15–12.40 — I4.2

***N.Bebenin* – Conduction and disorder in CMR lanthanum manganites**

The colossal magnetoresistance (CMR) in $La_{1-x}D_xMnO_3$, D=Sr, Ba, Ca, is a manifestation of ferromagnetic-to paramagnetic phase transition. If the transition is of second order the dependence of resistivity on magnetic field is determined by the dependence on activation energy on magnetization. If the magnetic transition is of first order, then the CMR effect is due to the shift of TC.

12.40–13.05 — I4.3

***S.Varnakov* – MBE of iron silicide heterostructures for spintronics**

In this work we consider results of works on the preparation by molecular beam epitaxy (MBE) and investigation of heterostructures nonmagnetic semiconductor/ferromagnetic metal. As a result of studying the conditions

of the formation of various silicide phases, single-crystal films of ferromagnetic metal silicide Fe_3Si on the single crystal substrate of Si (111) were obtained.

13.05–13.30

I4.4

***N.Volkov* – Magnetic-field-driven electron transport in ferromagnetic/ insulator/semiconductor hybrid structures**

We demonstrate that the devices based on the ferromagnetic metal/insulator/semiconductor hybrid structures can exhibit specific magnetotransport properties. In this report we will talk about gigantic dc magnetoresistance, magnetoimpedance and optical induced magnetoresistance.

Session 4.16

SECTION 10
Low dimensional magnetism and nanostructured materials

ROOM C

Chairman

S. Komogortsev

11.50.–12.15

I10.5

***G.Kurlyandskaya* – Bimetallic FeNi nanoparticles obtained by the electric explosion of wire - basis for functional nanocomposites**

In this work we describe our experience in iron-nickel EEW MNPs fabrication, their structural, magnetic, magnetocaloric and microwave characterization followed by fabrication and characterization of FeNi MNPs/polymer of composites in the range of 5–90 wt% of MNPs.

12.15–12.40

I10.6

***N.Kazak* – Charge ordering in Mn_2BO_4: XRD and XANES studies**

An XAS spectroscopy study of mixed-valence Mn_2BO_4 has been carried out. The Mn K-edge XANES and EXAFS spectra have been measured over a wide temperature range (8.8 – 500 K). The bimodal Mn^{2+} and Mn^{3+} distribution has been observed. The charge ordering of type $Mn^{2+}(2)$-$Mn^{3+}(1)$ has been found.

12.40–12.55

O10.4

***A.Kharlamova* – Exchange interaction in Co/Bi/Co thin-film systems with Bi interlayer**

The magnetic properties of Co/Bi/Co samples were investigated. The thickness of Co layers was equal to 5 nm and the thickness of Bi layers, tBi, was varied from 0.2 to 50 nm. It was discovered that the value of the saturation field, HS, of the studied samples oscillates with increasing tBi from 0.2 to 50 nm.

12.55–13.10

O10.5

***D.Devyaterikov* – Model-less approach in X-ray reflectivity of multilayer nanoheterostructure Fe / Cr**

A new model-less method of determining the concentration element profile of metal multilayer nanoheterostructures systems for low-contrast in X-ray reflectivity is discussed. The key idea of the new approach is to formulate the X-ray reflectivity (XRR) integral equation in terms of the element profile p_i (z), which describes the probability to find the element i adepth z from the surface of the sample.

13.10–13.25 — O10.6

P.Solovev **– Micromagnetic simulation study of magnetic anisotropy in obliquely deposited thin films**

Here we study the static magnetic properties of obliquely deposited thin Ni_{80} Fe_{20} films. We developed Monte Carlo film growth simulator, which allows us to generate three-dimensional structures of the thin films. We transfer the structures data to our micromagnetic simulation magnetization reversal processes, highlighting the dependence of the magnetic anisotropy on the deposition angle.

Session 5.16

SECTION 1
Fundamental magnetic properties

ROOM A

Chairman
A. Syromyatnikov

14.30–14.55 — I1.7

N.Perov **– Information on the Russian Magnetic Society MAGO**

14.55–15.20 — I1.8

S.Molodtsov **– European XFEL - novel tool for study ultrafast magnetic phenomena**

15.20–15.35 — O1.7

A.Fedorov **– Quantum-chemical study of modified zinc oxide nanostructures**

The DFT investigations of single defects- oxygen and zinc adatoms, zinc and oxygen vacancies inside bulk ZnO sphalerite-type structure have been made for different supercells and slabs. It was established the magnetism of ZnO structures induced by oxygen adatoms and and zinc vacancies.

15.35–15.50 — O1.8

N.Pavlovskiy **– Magnetostriction in hexagonal $HoMnO_3$ single crystal**

15.50–16.05 — O1.9

S.Gudin **– Evaluation of the Effect of Various Conduction Mechanisms on the Magnetoresistance of Lanthanum Manganites $La_{0.85}Sr_{0.15}MnO_3$**

A method is proposed that allows one to divide the magnetoresistance observed in manganites into three mechanisms: dimensional, orientational, and magnetic. The first two mechanisms are associated with the stratification of a substance into ferromagnetic and nonferromagnetic phases, which significantly differ in electric resistivity.

16.05–16.20 — O1.10

A.Kamantsev **– Measurement of magnetocaloric effect in pulsed magnetic fields**

We present a new technique for experimental study of kinetics of PTs and measurement of the MCE in pulsed magnetic fields by using the fast response temperature probe with infrared optical fiber and semiconductor photo resistor. MCE measurements for Gd near Curie point is $\Delta T = 0.7$ C under pulsed magnetic field H = 6 kOe, with 20 kHz frequency resolution.

Session 6.16

SECTION 4
Transport phenomena and spin electronics

ROOM B

Chairman
N. Volkov

14.30–14.55

I4.5

***N.Averkiev* – Current-induced spin orientation in semiconductors and low-dimensional structures**

Relationship between spin polarization and electric field (or current) is due to spin-orbit interaction. The coupling leads to homogeneous spin polarization in systems with low symmetry, e.g. in deformed crystals or quantum nanostructures.The talk presents the overview of theoretical and experimental works devoted to the above-mentioned phenomena and related effects in semiconductor structures.

14.55–15.20

I4.6

***G.Seibold* – Intrinsic Spin-Hall Effect in Systems with Striped Spin-Orbit Coupling**

Here we show that, in the presence of disorder, a striped modulation of a two-dimensional electron gas, affecting both density and Rashba spin- orbit coupling, gives rise to a finite spin Hall conductivity in contrast with the corresponding homogeneous system. We suggest that this mechanism can be exploited for a practical realization of a spin-Hall device.

15.20–15.45

I4.7

***S.Gudina* – Quantum Hall effect and variable-range hopping conductivity in n-InGaAs/InAlAs heterostructures**

We have investigated experimentally the magnetoresistance tensor components in the integer quantum Hall effect regime on a series of metamorphic nanoheterostructures n-InGaAs/InAlAs samples with high InAs in the active layer for the temperatures T = (0.4-30.0)K. Measurements were carried out in a linear current regime I ≤ 400 μA at T ≤ 4.2 K in magnetic fields B = (0÷12) T.

15.45–16.00

O4.1.

***S.Aksenov* – Spin-polarized transport through Majorana bound states in a canted magnetic field**

The transport properties of 1D semiconducting wire with a strong spin-orbit interaction, proximity-induced s-type superconductivity in a canted magnetic field are analyzed by the nonequilibrium Green's function method. It is shown that the symmetry of the distribution of the electron spin polarization in the Majorana bound state is broken and can be effectively probed using ferromagnetic leads.

16.00–16.15

O4.2

***S.Popkov* – Positive magnetoresistance of single-crystal bilayer manganites $(La_{1-z}Nd_z)_{1.4}Sr_{1.6}Mn_2O_7$**

It is demonstrated that the $(La_{1-z}Nd_z)_{1.4}Sr_{1.6}Mn_2O_7$ (z=0, 0.1) manganites exhibit the positive magnetoresistance effect. The mechanism of this effect is shown to be fundamentally different from the colossal

magnetoresistance effect typical of lanthanum manganites. The positive magnetoresistance originates from spin-dependent tunneling of carriers between the manganese-oxygen bilayers.

16.15–16.30

O4.3

***A.Gamzatov* – Low-temperature spin-dependent transport in polycrystalline manganites at high magnetic fields**

It is shown that the behavior of the resistivity and magnetoresistance in policrisalline maganites at low temperatures is successfully described by the model of intergrain spin-polarized tunnel charge transfer. In accordance with this model, the resistivity is expressed in terms of the correlation function of magnetizations of neighboring grains.

16.30–16.45

O4.4.

***A.Ekomasov* – Vortex cores dynamics and switching in nanocolumnar conducting triplex structure**

With the generalized Landau-Lifshitz equation the dynamics of the magnetization in the permalloy nanopillars is studied. For the numerical calculation a software package for micromagnetic simulations SpinPM was used. The study of two coupled magnetic vortices under the influence of an external magnetic field perpendicular to the plane of the sample and polarized electric current was conducted.

16.45–17.00

O4.5.

***S.Aplesnin* – Magnetoresistance $Tm_xMn_{1-x}S$ in paramagnetic state**

Session 7.16

SECTION 10

Low dimensional magnetism and nanostructured materials

ROOM C

Chairman

L. Uspenskaya

14.30–14.55

I10.7

***M.Vazquez* – Magnetization reversal in individual cylindrical nanowires: role periodical modulations in diameter and composition**

Co and CoFe cylindrical nanowires with periodical modulations in diameter were designed and growth by electrochemical route. The magnetization distribution at remanence and its reversal mechanism were determined by Kerr effect and by PEEM-XMCD and MFM imaging. The spin reversal process by nucleation and propagation of vortex-like domain wall was concluded by micromagnetic simulations.

14.55–15.20

I10.8

***H.Meyerheim* – Evolution of structure and magnetism in ultrathin Cr films on the (001) surface of the topological insulator Bi_2Se_3**

Using surface x-ray diffraction and spectroscopy in combination with ab-initio calculations we investigated the ultrathin Cr films on the (0001) surface of the topological insulator Bi_2Se_3. At 0.3 monolayer coverage, Cr atoms ($m \approx 3\mu_B$) are found in (Se) substitutional sites and in the van der Waals gap having no magnetic long range order. Beyond 1 monolayer, Cr atoms from islands of quasi-hexagonal double layers which are ferri-magnetically coupled.

15.20–15.45 I10.9

I.Lyapilin – Spin effects in hybrid heterostructures: normal metal/ magnetic insulator

By using the spin transfer torque (STT), the spin pumping effect (SPE), the spin Hall effect (SHE), and the spin Seebeck effect (SSE), it is possible to create and inject spin current in hybrid ferromagnetic/normal-metal (FM/NM) structures. In the spin Seebeck effect, a spin current is generated by the motion of spin carriers created by a temperature gradient.

15.45–16.00 O10.7

A.Kolesnikov – Thickness dependence of structural and magnetic properties of Ru/Co/Ru films with perpendicular magnetic anisotropy

We present the results of the study of microstructural and magnetic properties of thin Ru/Co/Ru films with perpendicular magnetic anisotropy (PMA). The maximum value of PMA was observed at the Co film's thickness of 0.9 nm. To induce PMA in the Co film we experimentally determined thicknesses of the Ru buffer and capping layers.

16.00–16.15. O10.8

R.Baulin – Field-temperature evolution of the magnetic state of [Fe(1.2 Å)/Cr(10.5 Å)]30 sample by Mössbauer reflectometry with synchrotron radiation

*Mössbauer investigation of the epitaxial [57Fe(1.2Å)/Cr(10.5 A]*30 sample performed at ESRF with Synchrotron Mössbauer Source near the critical angle of total reflection at different temperatures (4 -150°K) and external fields (H_{ext}=0-4 T). Obtained Bhf field distributions indicate that our film at helium temperatures contains spin-glass regions mixed with superparamagnetic clusters.*

16.15–16.30 O10.9

D.Ponomarev – Local atomic structure of Fe/Cr multilayers: depth-resolved method

We have developed a method for investigation of the local atomic structure with depth resolution for systems $[Fe/Cr]_n$ with overlapping coordination spheres. This method consists in solving the inverse problem using the experimental data on EXAFS spectroscopy with angle resolution and X-ray reflectivity data. It will gives us a detailed information about atomic and magnetic structures of Fe/Cr multilayers.

16.30–16.45 O10.10

A.Davydenko – Investigation of perpendicular magnetic anisotropy in epitaxial Pd/Co/Pd trilayers grown on Si(111)

Pd/Co/Pd trilayers were epitaxially grown on Cu/Si(111) surface. Origin of perpendicular magnetic anisotropy was investigated in Pd/Co/Pd trilayers by analyzing the dependence of energy of perpendicular magnetic anisotropy on the Pd buffer layer thickness. Strains may contribute to perpendicular magnetic anisotropy by modifying electronic structure of the Co/Pd interfaces.

16.45–17.00 O10.11

R.Eremina – Magnetization of manganite thin films on ferroelectric substrates

We investigated the impact of the ferroelectric substrate to the magnetic properties of manganite thin films.

Session 8.16

SECTION 1
Fundamental magnetic properties

ROOM A

Chairman

A. Mikheyenkov

17.20–17.45

I1.9

T.Goto – Spin wave interference using forward volume mode in yttrium iron garnet

Spin wave interference using forward volume mode in 10 micron thick yttrium iron garnet was demonstrated. Constructive and destructive interference were clearly observed because of the reflection suppression using Au coating on the edge of the spin wave waveguide. These results showed the appropriate way to use forward volume spin wave in spin wave circuits.

17.45–18.00

O1.12

A.Tsirlin – Commensurate and incommensurate order on the triangular spin lattice in $Li_2NiW_2O_8$

Triangular-lattice antiferromagnet $Li_2NiW_2O_8$ reveals two magnetic transitions at T_{N1}~18 K and T_{N2}~12.5 K. Using neutron scattering and nuclear magnetic resonance, we show that the intermediate-temperature phase is an incommensurate spin-density wave. It emerges from the commensurate order formed below T_{N2}, in striking similarity to $Ca_3Co_2O_6$.

18.00–18.15

O1.13

I.Sharafullin – Magneto-Electric interaction, phase transitions and critical phenomena for Multiferroic Thin Film by Monte Carlo Simulation

Magneto-electric effect in a coupled ferromagnetic-ferroelectric thin film, has been investigated. A classical Heisenberg model describes the energy stored in the ferromagnetic film, and we use a model with a transverse Ising Hamiltonian to characterise the energy of electric dipoles in the ferroelectric film.

18.15–18.30

O1.14

Y.Koshkid'ko – Anisotropy of the magnetocaloric effect of $Tb_{0.22}Gd_{0.78}$ single crystal in magnetic fields up to 14 T

Measurements of MCE by direct method were performed on a single crystal $Tb_{0.22}Gd_{0.78}$. MCE of ΔT_a measured along the axis a is 18.3 K in a field of 14T. The rotational MCE reaches the giant quantities ΔT_{rot} = 3.2 K. The theoretical analysis of the experimental data obtained by a direct method on the basis the first of the two constants of magnetic anisotropy and torque curves is carried out.

Session 9.16

SECTION 7
Ultrafast magnetism

ROOM B

Chairman

I. Sandalov

17.20–17.45

I7.1

C.von Korff Schmising – Probing ultrafast spin dynamics with high-harmonic magnetic circular dichroism spectroscopy

Magnetic circular dichroism in the extreme ultraviolet (XUV) spectral range is a powerful technique for element-specific and time-resolved probing of magnetization in multicomponent magnetic alloys and multilayers. We apply this

novel technique to directly access the time-resolved dynamics of interface magnetism of a Pt/Co/Pt sample system.

17.45–18.10

I7.2

***V.Belotelov* – Floquet states of optically pumped magnetization dynamics in iron garnets**

Here we investigate excitation of Floquet states of the magnetization in iron-garnet films by a sequence of the laser pump pulses. By changing an external magnetic field it is possible to modify the Floquet states. In particular, the magnetization precession amplitude is enhanced by more than 10 times at the centre of the Brillouin zone.

18.10–18.35

I7.3

***A.Kalashnikova* – All-optical and electric-bias induced magnetization reversal mediated by electron-electron exchange scattering**

We propose simple microscopical model demonstrating that s-d and s-f exchange scattering can be a driving mechanism of the magnetization reversal in a metallic 3d-4f ferrimagnet triggered by the rapid increase of the s-electrons temperature by femtosecond laser pulse.

18.35–18.50

O7.1

***N.Orlova* – Orbital model of ultrafast magnetic dynamics. Its advantages, challenges and opportunities to overcome them**

The model linking the magnetic ultrafast dynamics with non-equilibrium orbital momenta recovered by femtosecond optical pump is being discussed. Non-equilibrium orbital momenta having the oscillation frequencies in the teraherz range differ significantly from the equilibrium orbital momenta partly recovered by spin-orbital interaction.

Session 10.16

SECTION 10

Low dimensional magnetism and nanostructured materials.

ROOM C

Chairman

A. Samardak

17.20–17.45

O10.12

***A. Nasseri* – Magnetic Domain Wall Motion under the Application of In-plane Fields**

In this work, micromagnetic simulations and analytical models are used to study field and current-driven DW motion under high in-plane fields in perpendicularly magnetized samples with strong DMI. An extended analytical model including canting in the domains is developed to describe the micromagnetic results with acceptable accuracy.

17.35–17.50

O10.13

***L.Uspenskaya* – Magnetic relaxation in magnetron-fabricated $Pd_{99}Fe_{01}$ nanofilms**

Magnetic properties of ultrathin $Pd_{99}Fe_{01}$ films grown on niobium films are investigated by magneto-optic visualization, SQUID-magnetometry, and Hall-voltage measurements in the temperature range from 3 to 40K. We show that the films are ferromagnetic at thickness larger than 10 nm. The Curie temperature TC varies from 2 to 40K with increase of film thickness to 80 nm.

17.50–18.05 | O10.14

***D.Cimpoesu* – Characterising magnetic wires from static to dynamic using FORC diagrams**

We have experimentally studied the magnetization switching using dynamic first-order reversal curves (FORC) diagrams. The switching field as well as the domain wall dynamics is dependent on the applied field rate. We have developed also a simple model able to reproduce with a remarkable accuracy the typical features of the experimental FORC diagrams.

18.05–18.20 | O10.15

***A.Sboychakov* – Electronic properties of twisted bilayer graphene**

We study the electronic properties of twisted bilayer graphene in the tight-binding approximation. Using the Lanczos algorithm, we calculate the bilayer single-electron spectrum for commensurate twist angles. For angles smaller than critical value (about 2 degree), our calculations predict the system to be a metal with a well-defined Fermi surface which is reduced to Fermi points for some values of angles.

18.20–18.35 | O10.16

***I.Yakovlev* – High uniaxial magnetic anisotropy of $Fe_{1-x}Si_x$ synthesized by MBE**

Structure and magnetic anisotropy of the films obtained by simultaneous deposition of iron and silicon with different stoichiometric ratio on n-Si(111) 7×7 at 130 °C are investigated. It is found the uniaxial anisotropy for the film $Fe_{(1-x)}Si_{(x)}$ with x = 0.25 (Fe_3Si stoichiometric ratio) deposited on Si(111) with 1°-top surface deviation is 8.13 Oe, but for the film (x = 0.25) deposited on Si(111) with 4° is 75.45 Oe.

POSTER SESSION 1

79 SVOBODNY AV., HALL OF THE BLD.1

Chairman

V.Gavrichkov

18.30–21.00

P1.1- P1.52,
P4.1-P4.12,
P7.1-P7.3,
P8.1-P8.6,
P12.1-P12.6

Day 3. 17.08

PROGRAMME

8.15	**TRANSFER FROM THE CITY CENTRE HOTELS**	
9.00 – 11.35	Session 1.17 **SECTION 1. Fundamental magnetic properties**	**Room A**
	Session 2.17 **SECTION 2. Magnetism and Superconductivity**	**Room B**
	Session 3.17 **SECTION 6. Magnetooptics and X-ray magnetooptics**	**Room C**
11.40 – 12.20	**COFFEE BREAK**	79 Svobodny Av., hall of the Bld.1
12.20 – 13.35	Session 4.17 **SECTION 1. Fundamental magnetic properties**	**Room A**
	Session 5.17 **SECTION 2. Magnetism and Superconductivity**	**Room B**
	Session 6.17 **SECTION 10. Low dimensional magnetism and nanostructured materials.**	**Room C**
13.30 – 14.30	**LUNCH**	
14.30 – 17.00	Session 7.17 **SECTION 5. Dynamics of spin systems and magnetic resonances**	**Room A**
	Session 8.17 **SECTION 2. Magnetism and Superconductivity**	**Room B**
	Session 9.17 **SECTION 6. Magnetooptics and X-ray magnetooptics**	**Room C**
17.00 – 17.20	**COFFEE BREAK**	79 Svobodny Av., hall of the Bld.1
17.20 – 18.50	Session 10.17 **SECTION 5. Dynamics of spin systems and magnetic resonances**	**Room A**
	Session 11.17 **SECTION 3. Magnetism of strongly correlated electronic systems**	**Room B**
	Session 12.17 **SECTION 9. Magnetic nanoparticles and granular systems**	**Room C**
18.30 – 21.00	**POSTER SESSION 2** **P2.1-P2.17, P6.1-P6.19, P10.1-P10.45**	79 Svobodny Av., hall of the Bld.1. *Chairman S. Varnakov*
20.30 – 23.30	**NIGHT CITY BUS TOUR**	departure from 79 Svobodny Av
21.00	**BUS TRANSFER TO THE CITY CENTRE HOTELS**	

Session 1.17

SECTION 1

Fundamental magnetic properties

ROOM A

Chairman

K. Kugel

9.00–9.25

I1.10

A.Pankrats – Inclined magnetic structures in the mixed $Pr_xY_{1-x}Fe_3(BO_3)_4$: neutron and magnetic studies and molecular-field approximation

Transformation from easy-axis to easy-plane antiferromagnetic structure through the formation of the inclined magnetic state in the family of $Pr_xY_{1-x}Fe_3(BO_3)_4$ is studied using neutron and magnetic researches and molecular-field approximation. The parameters of the crystal field for Pr ions, of the exchange d-d and f-d interactions and the anisotropy constants for Fe subsystem are determined.

9.25–9.50

I1.11

A.Mikheyenkov – Frustrated and incommensurate states in 2D J1-J2-J3 Heisenberg model

The spin-1/2J1-J2-J3 Heisenberg model on a 2D square lattice is considered. For J1>J2>0 the results are compared with the experiment and a correspondence is proposed between frustration and the doping. Incommensurate states, appearing for nonzero J3, are also considered.

9.50–10.15

I1.12

K.Boldyrev – Terahertz spectroscopy of multiferroic $PrFe_3(BO_3)_4$ in an external magnetic field

In this talk, I am discussing interesting phenomena related to the magnetic-field behaviour of a coupled electron-phonon mode in praseodymium iron borate, as probed by the terahertz spectroscopy.

10.15–10.40

I1.13

A.Syromyatnikov – Percolation scenario near Superfluid-Bose-Glass transition

We examine the nature of quantum phase transition (QPT) from superfluid phase to Bose-glass one by discussion of particular simple modeling system: ferromagnet with small easy-plane one-ion anisotropy in transverse magnetic field with disorder in values of the one-ion anisotropy.

10.40–11.05

I1.14

V.Val'kov – Edge states and Majorana modes in condensed matter

In this work the properties of edge states and features of electronic transport of condensed matters able to realize a Majorana zero modes are investigated. The conditions of the existence of surface states and Majorana modes in two-dimensional electron systems on a triangular lattice and honeycomb lattice are studied.

11.05–11.20

O1.15

S.Martynov - Continual approach at T=0 in the mean field theory of incommensurate magnetic states in the frustrated Heisenberg magnet with an easy axis anisotropy

For Heisenberg model with competition between the nearest ferromagnetic and next-nearest antiferromagnetic exchanges and easy axis exchange anisotropy, the collinearity constraints imposed on the local exchange field and spin in the continual approach lead to nonlinear differential equations.

11.20–11.35 | O1.16

A.Aliev – **Magnetic and Lattice Contributions to the Magnetocaloric Effect in the First Order Phase Transition Materials**

A method to estimate the lattice and magnetic contributions to the magnetocaloric effect is proposed on the basis of field dependences of the MCE and magnetostriction, measured under identical conditions in alternating magnetic fields. Evaluation of the MCE contributions allows you to conduct target search for materials with a giant MCE.

Session 2.17

SECTION 2
Magnetism and Superconductivity

ROOM B

Chairman

M. Korshunov

9.00–9.25 | I2.1

A.Boris – **Superconductivity drives magnetism in-doped La_2CuO_4 heterostructures: SR and THz studies**

*We investigate superlattices (SLs) [(LaO-SrO-CuO_2)+ N * (LaO-LaO-CuO_2)] (δSr-LCON) grown on (001) oriented SrLaAlO 4 substrates. We report low-energy muon-spin-rotation, magnetic susceptibility, and THz magnetoconductivity studies on δSr-LCON SLs with N = 3,7, and 11, which show superconductivity with Tc ranging from 18 to 29 K, and a London penetration depth of λ ~ 500 nm.*

9.25–9.50 | I2.2

D.Dzebisashvili – **The reason for implementation of the d-wave rather than s-wave pairing in cuprate superconductors**

It is shown that space separation of the two-orbital subsystem of oxygen holes and spins on copper ions in high-Tc cuprate superconductors leads to the stability of the dx2-y2-wave superconductivity towards the strong Coulomb repulsion between holes located at the nearest oxygen ions.

9.50–10.15 | I2.3

M.Eremin – **Magnetic Susceptibility of Hole and Electron-doped HTSC Cuprates**

I will focus on the mutual interplay between the local and the itinerant components of spin response in inelastic neutron- and resonance inelastic X-ray scattering (INS and RIXS). Calculated collective spin excitations along(0,0) –(0,π) are in agreement with the positions of the absorption peak in the inelastic X-ray scattering spectra.

10.15–10.40 | I2.4

H.Chou – **Investigation of triplet superconductivity in [YBCO(10nm)/ LSMO (10nm)]4 superlattice films on STO(00l) substrate**

In this study, a [YBCO(10nm)/LSMO (10nm)]4 superlattice films on STO(00l) substrate is investigated by a polarized neutron reflectometer, X-ray magnetic circular dichroism and a series transport and magnetic measurements to understand the spin and orbital degree of freedom at the interface and the possible triplet superconducting in the magnetic layers.

10.40–11.05 I2.5

***O.Dolgov* – Does magnetic scattering always suppress superconducting transition?**

Here we analyse how magnetic impurities affect the low-energy properties of two-band s± and s++ pairings. In a general case, Tc is suppressed approximately following the standard Abrikosov-Gor'kov trend. There are, however, few exceptional cases with the saturation of Tc for the finite amount of impurities.

11.05–11.20 O2.1

***E.Shneyder* – Effects of electron-phonon interaction in strongly correlated copper oxides systems within alternative versions of generalized right-binding method**

To consider both the local effects of the strong electron-phonon interaction as a set of the Franck-Condon resonances and the electron dispersion in the infinite lattice, the polaronic version of the generalized tight-binding approach is proposed.

11.20–11.35 O2.2

Sponsor information
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Session 3.17

SECTION 6
Magnetooptics and X – ray magnetooptics

ROOM C

Chairman
M.Platunov

9.00–9.25 I6.1

***A.Chumakov* – Magnetism by nuclear resonance scattering of synchrotron radiation**

The talk reviews recent studies of fundamental magnetic properties, magnetism and superconductivity, magnetism of strongly correlated systems, spin systems dynamics, ultrafast magnetism, magnetic nanoparticles and granular systems, low-dimensional magnetism and nanostructured materials, molecular magnetism, and biomagnetism.

9.25–9.50 I6.2

***V.Dmitrienko* – Details of the Dzyaloshinskii-Moriya interaction in transition metal compounds**

We present theoretical and experimental results for several transition-metal compounds with the Dzyaloshinskii-Moriya (DM) interaction (Fe_2O_3, $MnCO_3$, $CoCO_3$, $NiCO_3$). It was found that the DM sign in $MnCO_3$ coincides with that one in $FeBO_3$, whereas $CoCO_3$ and $NiCO_3$ demonstrate the opposite sign. Experimental data have been supported by ab-initio simulations.

9.50–10.15 I6.3

***R.Pisarev* – Close relation between magnetic and optical phenomena in a complex multisublattice antiferromagnet CuB_2O_4**

We review results of our studies of linear and nonlinear optical phenomena. We will discuss

the electronic structure, unusual optical absorption, magnetic linear dichroism, second harmonic generation. We will show that close coupling of these phenomena with magnetic properties allowed us to disclose new details of the magnetic structure and phase transitions.

10.15–10.40

I6.4

***T.Mertelj* – Magnetooptical time-resolved study of Eu^{2+} spin dynamics in P and Co doped $EuFe_2As_2$ pnictide superconductors**

The presence of magnetic rare earth ions in the crystal structure of iron based pnictides enables study of a coexistence of the ferromagnetic order of the rare-earth f-orbital spins with the superconducting order. We report on temperature and magnetic field dependent photoexcited electron and spin relaxation in $EuFe_2(As,P)_2$ and $Eu(Fe,Co)_2As_2$.

10.40–10.55

O6.1

***V.Kats* – Magneto-optical study of the ferromagnetic semiconductor EuO integrated with Si**

We study polar magneto-optical Kerr effect in EuO film on the Si substrate. EuO has an advantage of structural and electronic compatibility with Si and the thermodynamic stability of the EuO/Si contact. Therefore, optical, magneto-optical, magnetic and transport properties of nanoscale EuO films epitaxially integrated with Si are of particular interest.

10.55–11.10

O6.2

***L.Agafonov* – The First Visualization of Magnetic Domain Structure in Iron Garnet Film by Confocal Raman Microscopy**

This paper proposes a new technique of magnetic domain structure visualization based on a combination of magneto-optical Faraday effect and Raman scattering on a totally symmetrical vibration mode. The developed technique was applied to visualization of magnetic domain structure in (111) $(YLuBi)_3(FeGa)_5O_{12}$ iron garnet film.

11.10–11.35

I6.5

***A.Grishin* – Multi-Merit and Multimodal All-Garnet Heteroepitaxial Magneto-Optical Photonic Crystals**

I survey the cutting edge results on synthesis and properties of all-garnet heteroepitaxial magneto-optical photonic crystals. They are built by alternating layers of a nonmagnetic rare earth gallium garnet and bismuth substituted iron garnet $Bi_3Fe_5O_{12}$ which promise great potential for MO memory, light guiding, filtering and switching, exceptional dispersion, nonreciprocal and sensing properties.

Session 4.17

SECTION 1
Fundamental magnetic properties

ROOM A

Chairman

A. Pyatakov

12.20–12.45

I1.16

***O.Sushkov* – Quantum criticality, deconfinement, and asymptotic freedom in quantum magnets**

Two novel generic quantum effects in magnetic systems are proposed. The first effect is Bose

condensation of spin 1/2 spinons. The effect violates Pauli spin-statistics relation. The second effect is asymptotic freedom of magnons at a conventional quantum critical point. The freedom of magnons is somewhat similar to asymptotic freedom of gluons in quantum chromodynamics.

12.45–13.10

I1.17

***N.Mushnikov* – Magnetic phase transitions and magnetocaloric effect in layered intermetallic compounds**

We studied magnetic, magnetothermal and magnetoelastic properties of quasi-ternary $R_{1-x}R`_xMn_2Si_2$ and $R_{1-x}R`_xMn_6Sn_6$ rare-earth intermetallics. For these compounds, strong ferromagnetic interaction of magnetic atoms within the layer provides high ordering temperatures. At the same time, the formation of magnetic structure as a whole is traceable to a relatively weak interlayer interaction.

13.10–13.35

I1.18

***N.Baranov* – Magnetic orderings, phase transitions and magnetic hysteresis in iron containing chalcogenides with layered structures**

The results of comprehensive studies of the crystal structure and magnetic properties of layered compounds Fe_7X_8 and titanium dichalcogenides Fe_yTiX_2 intercalated with iron will be presented. The magnetic properties of Fe_7X_8 are found to be strongly influenced by substitutions and by pressure.

Session 5.17

SECTION 2
Magnetism and Superconductivity

ROOM B

Chairman
M.Eremin

12.20–12.45

I2.6

***I.Deryagina* – Structure of Diffusion Layers in Nb_3Sn-based Multifilamentary Composites for Superconducting Magnets**

In the present study the structure of Nb_3Sn layers in multifilamentary wires produced by the VNIINM (Moscow) have been studied. It is demonstrated that varying the diffusion annealing regimes it is possible to optimize the superconducting layers structure and increase Jc of the superconductors.

12.45–13.10

I2.7

***L.Tagirov* – Exchange Biasing of Diluted Ferromagnetic Alloy Films in Application to Superconducting Spin-Valves**

Experimental studies of exchange biasing of diluted ferromagnetic alloy films and their discussions are presented.

13.10–13.35

I2.8

***Yu.Proshin* – Asymmetrical ferromagnet-superconductor trilayers: solitary superconductivity and spin valve**

The existence of proximity effect for the layered ferromagnet-superconductor (FS) structures gives rise to a number of interesting phenomena and effects, for example, the reentrant superconductivity. In present work, we theoretically investigate a solitary superconductivity for asymmetrical F_1SF_2 and F_1F_2S system.

Session 6.17

SECTION 10

Low dimensional magnetism and nanostructured materials

ROOM C

Chairman
G. Kurlyandskaya

12.20–12.35

O10.17

N.Kulesh – Asymmetrical magnetization processes in FM/FeMn (FM = Fe-Ni, Co, Fe, Ni) films with unidirectional anisotropy

Asymmetric magnetization reversal was investigated in multilayers based on FeMn/FM exchange coupled system with various ferromagnetic layers (FM = $Fe_{20}Ni_{80}$, $Fe_{10}Ni_{90}$, Co, Fe, Ni). Hysteresis loops (longitudinal and transversal magnetization components) were measured for the magnetic field applied at different angles in respect to the anisotropy direction.

12.35–12.50

O10.18

J.Rubin – Fe/Si_3N_4 multilayers with low content of nonmagnetic phases

We present the study of [Fe(tFe)/Si_3N_4(3nm)]$_n$ multilayers prepared using rf magnetron sputtering for both Fe and Si_3N_4 layers. The metal/insulator interface was studied by XRR, and Conversion Electron Mössbauer Spectrosopy. In addition to alpha-Fe, the CEMS spectra showed a second magnetic phase and a non-magnetic phase.

12.50–13.05

O10.19

I.Dzhun – Exchange bias in NiFe/IrMn/NiFe trilayers with different NiFe composition

In this work ferromagnetic resonance investigations of exchange bias in ferromagnetic/antiferromagnetic/ferromagnetic trilayer structures with different thickness of antiferromagnetic layers for two different compositions, $Ni_{40}Fe_{60}$ and $Ni_{75}Fe_{25}$, in the ferromagnetic layers are reported.

13.05–13.20

O10.20

I.Tarasov – Examination of structure, optical and magnetic properties of epitaxial $Fe_{1-x}Si_x$/Si(111) alloy films

The binary Heusler alloy Fe_3Si is the potential candidate for spin-injectors. However, it has been examined that Fe_3Si has low spin polarization (P) ($0.15 \leq P \geq 0.45$) and should be improved. In this work, we investigated the way that the Si content, chemical and structural order affect on optical, electronic and magnetic properties of epitaxial $Fe_{1-x}Si_x$ thin films in composition range $0 \leq x \geq 0.4$.

13.20–13.35

O10.21

A.Tarasov – Characterization and magnetotransport properties of textured Fe_3O_4 films

In this work we present results of systematically investigation of structural, magnetic and magnetotransport properties Fe_3O_4 thin films. Resistivity measurements in the temperature range 80−273 K showed that the dominant carrier transport mechanism in the films is thermoactivated tunneling.

Session 7.17

SECTION 5
Dynamics of spin systems and magnetic resonances

ROOM A

Chairman
H.Ohta

14.30–14.55

I5.1

H.Ohta – Development of Multi-Extreme THz ESR and Its Application to Shastry-Sutherland Model Substance $SrCu_2(BO_3)_2$

Development of THz electron spin resonance (ESR) under multi-extreme conditions in Kobe, which include the high magnetic field up to 55 T, the high pressure up to 2.5 GPa, will be presented. As an application of such system, high pressure THz ESR has been performed on the Shastry-Sutherland Model Substance $SrCu_2(BO_3)_2$ up to 2 GPa at 2 K. Possible pressure-induced phase transition will be discussed.

14.55–15.20

I5.2

O.Tretiakov – Stability and Dynamics of Antiferromagnetic Skyrmions

In this work, we propose a novel topological object: antiferromagnetic skyrmion. This topological texture has no stray fields, we show that its dynamics are faster compared to its ferromagnetic analogue and diffusion constant is higher due to absence of Magnus force.

15.20–15.45

I5.3

A.Mukhin – Magnetoelectric phenomena with electromagnons in rare-earth borate

Electroactive spin excitation (electromagnons) are observed in multiferroic rare-earth ferroborates $Sm_{1-x}La_xFe_3(BO_3)_4$ which produce two types of dynamic magnetoelectric effects for the wave vector k||c-axis of the crystal. A theory is developed which explains the observed dynamic magnetoelectric phenomena.

15.45–16.00

O5.1

S.Nikitin – Investigation of spin dynamic of rare-earth orthoferrite $YbFeO_3$ by inelastic neutron scattering

We present results of investigation spin dynamic in $YbFeO_3$ single crystal by inelastic neutron scattering in temperature range of spin reorientation transition. We showed that magnon branches of iron subsystem at high energy are equivalent with $YFeO_3$ and another orthoferrites. Low energy spectrum caused by excitation of Yb^{3+} subsystem and can be described by Ising-Heisenberg model.

16.00–16.15

O5.2

A.Izotov – Determination of magnetic anisotropies and miscut angles in epitaxial thin films on vicinal (111) substrate by the ferromagnetic resonance

The ferromagnetic resonance method extremely sensitive to the small misorientation of monocrystal films from the (111) plane. We used this fact to develop a technique for determining the magnetic anisotropy parameters as well as the polar and azimuthal miscut angles of (111) substrate surface simultaneously.

16.15–16.30 | **O5.3**

***E.Kurdyukova* – Spectra of effective permeability and loss of magnetic composite films**

The effective permeability was determined from the ratio of capacitance of the capacitor with a film (magnetic metal-insulator) and without film. The results the permeability spectra for films for different composition and concentration of metals and dielectrics show that they have similar trend of behavior in general.

16.30–16.45 | **O5.4**

***L.Lutsev* – Low-relaxation spin waves in laser-MBE grown nanosized YIG films**

The YIG films were grown on gadolinium gallium garnet substrates by laser molecular beam epitaxy. It has been shown that spin waves propagating in YIG deposited at 70°C have extremely low damping which is less than $3.6 \cdot 10^{-5}$. It has been found that the contribution of the relaxation processes into the FMR linewidth is as low as 1.2%.

16.45–17.00 | **O5.5**

***M.Rautskii* – Ferromagnetic Resonance Study of the epitaxial Fe3Si(111) film on the Si(111) substrate**

The magnetic properties of the epitaxial Fe_3Si film were studied. The FMR study revealed a single narrow Lorenz line ΔHpp = 18 Oe. The film mosaic parameter Δθ = 0.15, Gilbert damping parameter G = 5.2 10^7 , M_s = 995 G and magnetic anisotropy fields: uniaxial F_{ua} = 2.7 Oe, unidirectional F_{ud} = 0.3 Oe, cubic F_c = 0.9 Oe was obtained by analyzing the angular dependence of the FMR.

Session 8.17

SECTION 2
Magnetism and Superconductivity

ROOM B

Chairman
A. Boris

14.30–14.55 | **I2.9**

***H.Kontani* – Interplay between the Nematicity, Magnetism and Superconductivity in Fe-based superconductors**

We investigate the emergence of the nematic orbital-order based on various first-principles Hubbard models. In Fe-based superconductors, spin-fluctuation-mediated large orbital-fluctuations appear because of the strong orbital-spin interplay due to the many-body effect. We also study the orbital+spin fluctuation mediated superconductivity in FeSe beyond the Migdal-Eliashberg approximation.

14.55–15.20 | **I2.10**

***M.Korshunov* – Spin-resonance peak in iron-based superconductors as a probe of gap symmetry**

Here we discuss theoretical background for appearance of the spin-resonance peak in inelastic neutron scattering in the s± state and why it is different from the peak in the s++ state. We study the dynamical spin susceptibility within multiband models and see how it evolves with the increasing complexity of the system.

15.20–15.45 | **I2.11**

***A.Akbari* – Spin excitons in the unconventional superconducting and Kondo Lattice Compounds**

While the spin resonance has been observed for many compounds we restrict our discussion

here exclusively to the small group of f-electron superconductors $CeCoIn_5$, $CeCu_2Si_2$ and UPd_2Al_3, hidden order Kondo compounds CeB_6 and URu_2Si_2 as well as the Kondo semiconductor YbB_{12}.

15.45–16.00

O2.3

***A.Zlotnikov* – The influence of spin and charge fluctuations on the coexistence phase of superconductivity and antiferromagnetism in heavy-fermion Ce-based compounds**

In this work using the periodic Anderson model a pressure dependence of the Neel temperature for quasi-2D cerium intermetallic compounds has been obtained. It has been shown that in the vicinity of the antiferromagnetic quantum phase transition the Cooper instability is realized.

16.00–16.15

O2.4

***A.Ivanov* – Magnetic dynamics in copper- and iron-based superconductors studied by inelastic neutron scattering**

Spin excitation spectra are studied by inelastic neutron scattering in different families of superconductors and their parent compounds. Evolution of the collective magnetic response is followed as a function of wave vector, temperature, magnetic field, doping with magnetic and non-magnetic impurities. Collected data are considered within itinerant carrier models.

16.15–16.30

O2.5

***V.Mitskan* – The mechanism of formation of the gapless superconducting phase with chiral order parameter in materials with a triangular lattice**

For layered materials with a triangular lattice in the framework of the t-J-V-model and t-J-V-model taking into account the interactions in the two coordination spheres the influence of Coulomb correlations on the formation of superconductivity with gapless spectrum is investigated. Two scenarios of occurrence gapless phase with d+id type symmetry of the order parameter are shown.*

16.30–16.45

O2.6

***G.Litak* – Interplay of charge and superconducting order on a hexagonal lattice**

Encouraged by the recent studies of the charge density wave and superconductivity evolution in $NbSe_2$ we propose theoretical modelling of the system in the vicinity of the Fermi energy based on a 3 band tight binding representation of the spectrum of the bulk system, which changes to a single band one if the thickness is reduced to a monolayer.

16.45–17.00

O2.7

***D.Gokhfeld* – Control of peak effect in YBCO by Nd substitution**

Substitution of Nd atoms in YBCO superconductor results in the peak effect on magnetization hysteresis. The measured hysteresis loops are superposition of a hysteresis loop of the superconducting grains and an additional paramagnetic magnetization of Nd atoms. Extended critical state model was generalized to describe the peak effect and applied to analysis of the magnetization loops.

Session 9.17

SECTION 6
Magnetooptics and X – ray magnetooptics

ROOM C

Chairman
A. Malakhovskii

14.30–14.55 **I6.6**

***T.Mikhailova* – Nano- and Micro-Scale Bi-Substituted Iron Garnets Films in Photonics, Plasmonics and Magneto-Optic Visualization**

The main aim of presented research is the development of technologies for synthesis of nano- and micro-scale Bi-substituted iron garnet (Bi: IG) films with specified properties and creation of structures based on them for applications in photonics, plasmonics (as surface plasmon resonance sensors, for example), magneto-optical (MO) visualization and so on.

14.55–15.20 **I6.7**

***H.Hsu* – Control of magneto-optical properties by applied voltage in Co/C heterostructures**

The electrical manipulation of magnetism has been achieved in Co/C heterostructures by MCD measurement. The electric field is used to control the MCD spectra. It can be associated with the C-Co reversible hybridization variation in turn affects the magnetization behavior by change in orbital occupancy in Co. It can open new perspective for C spintronics.

15.20–15.45 **I6.8**

***V.Grebennikov* – The X-ray magnetic dichroism, the sum rule and spin fluctuations on the surface of manganite (LaPrCa)MnO3**

Using the sum rules we get a good result for the Heusler alloys but in manganites the sum rules give unreasonably low values for the moments (5 times less than experiment). We suggest that the discrepancy arises because of strong spin fluctuation in the TEY surface layer of ~ 10 nm due to the competing exchange interaction of 3d and 4f atoms.

15.45–16.00 **O6.3**

***T.Kuznetsova* – Electronic magnetic structure of intermetallic compounds RNi_2Mn studied by the resonant XPS and XMCD**

The electronic magnetic structure of the $TbNi_2Mn$ and $DyNi_2Mn$ rare-earth (RE) intermetallides is studied. Resonant photoemission is used in the vicinity of the 2p- thresholds of transition elements and the 3d, 4d thresholds of RE metals to find the Ni, Mn and RE partial densities of the states in the valence band and their interplay. The XMCD was measured at the Ni, Mn K edges and Tb, Dy $L_{2,3}$ edges.

16.00–16.15 **O6.4**

***O.Borovkova* – Enhancement of the MO effects in active magneto-plasmonic structures**

Magneto-optical (MO) effects in nanostructures can be enhanced by an excitation of surface plasmon polaritons (SPP). However, SPPs experience strong losses in metals and

ferromagnetic materials that decreases a Q-factor of magneto-plasmon (MP) resonances. To compensate these losses, we address ferromagnetic dielectric doped by rear-earth ions. Transverse MO intensity effects are considered.

16.15–16.30 | **O6.5**

***N.Khokhlov* – Magneto-optical light modulator with the domain wall manipulation via giant magneto-electric effect**

We proposed the Faraday magneto-optical light modulator with magnetization switching due to magneto-electric effect. Varying laser spot size, angle between polarizer and analyzer, relative positions of the light spot and tip we experimentally obtained the linear regime with the modulation depth [I(V)-I(0)]/I(0) = 1.6, where V is tip's voltage.

16.30–16.45 | **O6.6**

***A.Telegin* – Origin of infrared magnetotransmission and magneto-reflection in ferromagnetic spinels**

It is shown that different physical mechanisms contribute to the giant magnetoreflection and magnetotransmission of unpolarized IR radiation in ferromagnetic spinel $Hg_{1-x}Cd_xCr_2Se_4$. The features of the band structure of spinel lead to a noticeable anisotropy of the observed effects and non-linear behavior of the magnitude of effects depending on the concentration of Cd.

Session 10.17

SECTION 6
Dynamics of spin systems and magnetic resonances

ROOM A

Chairman
A.Mukhin

17.20–17.45 | **I5.4**

***I.Burmistrov* – Mesoscopic Stoner instability and geometric noise of the spin**

In this talk we present recent results obtained for the mesoscopic Stoner instability in quantum dots and nanoparticles tunnel coupled to the ohmic reservoir.

17.45–18.00 | **O5.6**

***M.Stebliy* – Dynamic microwave response of disk-on-disk magnetic nanostructures**

In this work the high-frequency properties of double-layer asymmetric disk were studied. Comparison of results from experiments and simulations revealed the features of the dynamic processes, which explains the spectral dependence of the structure absorption.

18.00–18.15 | **O5.7**

***V.Tugarinov* – Magnetic resonance in $Pr_xY_{1-x}Fe_3(BO_3)_4$ single crystals with inclined magnetic structure**

Frequency-field dependences of the $Pr_xY_{1-x}Fe_3(BO_3)_4$ single crystal with EA antiferromagnetic structure are described by the theoretical calculation. The spin reorientation in the $Pb_{0.67}Y_{0.33}Fe_3(BO_3)_4$ with IC structure differs strongly from the calculated ones. The resonance data of the compound with x = 0.75 are intermediate between those of x = 1.0 and 0.67

18.15–18.30 | **O5.8**

***L.Kotov* – Spectra of the magnetic permeability and the magnetic structure of the composite films**

Magnetic spectra of the real μ' and the imaginary μ'' parts of permeability and tangent loss of the composite films were obtained. Metal and alloys (CoFeZr, CoFeB, CoTaNb, Co) and dielectrics (Al_2O_3, SiO_2, Zr_2O_3, Zr_2O) were used for the production of films. For some films were obtained giant permeability value (about 1000) up to 250 MHz.

Session 11.17

SECTION 3

Magnetism of strongly correlated electronic systems

ROOM B

Chairman

E.Bauer

17.20–17.45 | **I3.1**

***S.Ovchinnikov* – Spin crossover and Mott-Hubbard transition under high pressure and its effect on the physical properties of the low Earth's mantle**

17.45–18.10 | **I3.2**

***A.Sherman* – Low-frequency quantum oscillations due to strong electron correlations**

The DOS of the 2D Hubbard model in the perpendicular magnetic field is calculated using the strong coupling diagram technique. At the Fermi level the DOS oscillates with the field strength with frequency increasing by an order of magnitude with the change of doping x from small to moderate values. This variation is caused by the change of Landau subbands contributing to the DOS.

18.10–18.35 | **I3.3**

***H.Ikeda* – Ab initio calculations of superconducting gap structure in heavy-fermion superconductors $CeCu_2Si_2$ and UPt_3**

Based on the recent advanced first-principles theoretical approach, we discuss the superconducting gap structure in two well-known heavy-fermion superconductors, $CeCu_2Si_2$ and UPt_3. In the former, we show that the s± wave pairing state is the promising candidate, which is in sharp contrast to the widely believed d-wave superconductor. In the latter, we discuss the possible E_{1u}/E_{2u} gap structure.

Session 12.17

SECTION 9

Magnetic nanoparticles and granular systems

ROOM C

Chairman

R. Iskhakov

17.20–17.45 | **I9.1**

***S.Tanaka* – Analysis and Imaging of Magnetic Nanoparticle using Second Harmonic Responses**

We proposed a method to improve the detection sensitivity for the magnetization of MNPs, and their imaging technique, based on the detection of a second harmonic of the response using a high Tc SQUID. In this paper, superparamagnetic MNPs with different diameters and different compositions

of materials were analyzed by the method and the best of the MNPs were applied to a 2-D imaging demonstration.

17.45–18.10

I9.2

***Yu.Raikher* – Superparamagnetic effects in ferromagnetic resonance and relaxation of single-domain particles**

The properties of nanosize ferromagnets differ greatly from their analogs in the bulk. We illustrate newly developed approach by a number of FMR examples. As well we show how the Stoner-Wohlfarth hysteresis loop of a magnetically hard particle, under temperature increase, evolves into an unhysteretic magnetization curve.

18.10–18.35

I9.3

***A.Morosov* – The microscopic mechanism of random fields induced order: the effective anisotropy created by defects**

Anisotropic distribution of defect-induced random local field directions leads to the defect-induced effective anisotropy. The order parameter is advantageous to orient perpendicularly to the preferential direction of the random fields. A weak anisotropy of the «easy axis» type translates X-Y model and the Heisenberg model to the class of Ising models that explains the appearance of the long-range order.

18.35–18.50

O9.1

***N. Vnukova* – Ni particles with shell carbon on the different allotropic modifications**

The Ni particles with carbon shell synthesized in the flow of carbon-nickel plasma under helium atmosphere. By oxidation of carbon the particles were isolated, then cleaned and investigated by XRD, XPS, EPS, Raman scattering and electron microscopy. The comparison of magnetic properties and structures of powders synthesized at different helium pressure were presented.

POSTER SESSION 2

79 SVOBODNY AV., HALL OF THE BLD.1

Chairman S. Varnakov

18.30–21.00

P2.1-P2.17, P6.1-P6.19, P10.1-P10.45

Day 4. 18.08

PROGRAMME

8.15	**TRANSFER FROM THE CITY CENTRE HOTELS**	
9.00 – 11.35	Session 1.18 **SECTION 5. Dynamics of spin systems and magnetic resonances**	**Room A**
	Session 2.18 **SECTION 3. Magnetism of strongly correlated electronic systems**	**Room B**
	Session 3.18 **SECTION 11. Magnetic memories**	**Room C**
11.35 – 12.00	**COFFEE BREAK**	79 Svobodny Av., hall of the Bld.1
12.00 – 13.30	Session 4.18 **SECTION 5. Dynamics of spin systems and magnetic resonances**	**Room A**
	Session 5.18 **SECTION 3. Magnetism of strongly correlated electronic systems**	**Room B**
	Session 6.18 **SECTION 9. Magnetic nanoparticles and granular systems**	**Room C**
14.30 – 18.00	**EXCURSION: Ski elevator "Bobrovyi log" to Stolby with walking to the viewpoint (20min) and back**	departure at 14-30 from SFU, Bld.1, 79 Svobodny Av.
18.30	**TRANSFER FROM THE CITY CENTRE HOTELS TO THE CONFERENCE DINNER**	
19.00	**CONFERENCE DINNER**	SFU, 79 Svobodny Av., Bld.4
23.00	**BUS TRANSFER TO THE CITY CENTRE HOTELS**	

Session 1.18

SECTION 5

Dynamics of spin systems and magnetic resonances

ROOM A

Chairman
M. Stebly

9.00–9.15 | **O5.9**

***A.Semisalova* – Ferromagnetic resonance in FeRh thin films near the antiferromagnetic-ferromagnetic phase transition**

9.15–9.30 | **O5.10**

***I.Poperechny* – Effect of thermal fluctuations on the isotropic FMR field shiftin single-domain particles**

9.30–9.45 | **O5.11**

***S.Vizulin* – Modeling the structure of composite magnetic nanofilms according ferromagnetic resonance**

9.45–10.00 | **O5.12**

***V.Vlasov* – Symmetry breaking by surface magnetoelastic waves**

Excitation of FMR by elastic waves in the resonance conditions was calculated within a theoretical model taking into account of Landau-Lifshits-Gilbert (LLG) dynamics, boundary conditions for the magneto-elastic stresses and the equations for the elastic displacements. The precession amplitude dependence on the angle between the DC magnetic field and the direction of acoustic k-vector was obtained.

10.00–10.15 | **O5.13**

***M.Prosnikov* – Spin excitations and magnetic-structural phase transition in $Ni_3(BO_3)_2$**

We report the result of Raman scattering and infrared absorption/reflection experiments of the spin dynamics in the antiferromagnetic nickel orthoborate $Ni_3(BO_3)_2$. Evidences for magneto-structural phase transition along with theoretical and symmetry analysis of magnetic structures will be given.

10.15–10.30 | **O5.14**

***D.Pleshev* – Nonlinear magnetoelastic dynamics of the ferrite plate**

The paper is dealing with coupled oscillations of magnetization and elastic displacement in the normally magnetized ferrite plate that possesses magnetoelastic properties when the parametric excitation of spin waves was blocked. Regimes of regular and chaotic oscillations were detected. Profile of the acoustic resonance first mode is defined in case of nonlinear excitation.

10.30–10.45 | **O5.15**

***M.Dubovik* – Irregular dynamics of topological solitons in moving domain walls (3D micromagnetic simulations)**

We present the results of the simulation of structural transformations in asymmetric domain walls in Permalloy film driven by an applied dc magnetic field. Various scenarios of complex dynamics caused by the topological transformations were observed including creation and annihilation of singular points, surface vortices and antivortices, the energy release and the initiation of wave processes.

Session 2.18

SECTION 3
Magnetism of strongly correlated electronic systems

ROOM B

Chairman
A.Sherman

9.00–9.25 | **I3.4**

S.Sun – Model simulation and mechanism investigation for ferromagnetic ZnO

A model is proposed to investigate the ferromagnetic ZnO, where both oxygen and zinc vacancies are key factors for the appearance of ferromagnetism. The ferromagnetism induced from the oxygen vacancies is with a strong enough magnetic coupling between Zn vacancy states. The ferromagnetism increases with the conduction carrier density is consistent with the experimental result of UV irradiations.

9.25–9.50 | **I3.5**

V.Pudalov – Spin Magnetization of Two-Dimensional Correlated Electron Systems

Thermodynamic measurements of the spin magnetization reveal the existence of the large-spin collective ferromagnetic states (spin-droplets). The existence of the spin droplets causes the spin susceptibility to diverge as T-2 in the T=0 limit. The spin droplets gradually disappear as density n or temperature grow, whereas the spin susceptibility per electron d/ dn shows a critical behavior.

9.50–10.15 | **I3.6**

V.Irkhin – Spiral magnetic order, non-uniform states and electron correlations in the conducting transition metal systems

The ground-state magnetic phase diagram is calculated within the Hubbard, s-d exchange and periodical Anderson models for different two- and three-dimensional lattices. We employ a generalized Hartree-Fock approximation to treat commensurate ferromagnetic, antiferromagnetic, and incommensurate magnetic phases. The first-order transitions between different types of magnetic order are discussed

10.15–10.40 | **I3.7**

A.Lavrov – Charge-lattice interplay in layered cobaltates $RBaCo_2O_{5+x}$

X-ray diffraction, electrical resistivity and thermal expansion measurements are used to study the interrelation between the structural, magnetic and electron-transport peculiarities in $RBaCo_2O_{5+x}$ (R = Y, Gd) over a wide range of oxygen contents. The obtained data give a clear evidence for the key role that the crystal lattice plays in selecting the preferred spin and orbital states of cobalt ions.

10.40–11.05 | **I3.8**

A.Petrova – Phase diagram of the itinerant helical magnet MnSi at high pressures and strong magnetic fields

We performed a series of resistivity, heat capacity and ultrasound speed measurements of a MnSi single crystal at high pressures and strong magnetic fields. Application of high pressure and

strong magnetic fields shows fast degradation of the first order features of the helical phase transition in MnSi.

11.05–11.20

O3.1

***V.Ryzhov* – Peculiarities of magneto-electronic phase separation above TC in $La_{1-x}Ca_xMnO_3$ x=0.18, 0.22 single crystals with and without insulator-metal transition respectively**

The comparative study of magnetoelectronic phase separation was performed in manganites without/with I-M transition, we studied x = 0.18, 0.22 single crystals of $La_{1-x}Ca_xMnO_3$ series exhibiting large CMR, magneto-caloric effect and rich phase diagram. The study of field and temperature dependences of second harmonic response indicated nucleation of FM metallic clusters in them.

11.20–11.35

O3.2

***K.Mikhalev* – Inhomogeneous magnetic state in the electron-doped $Sr_{1-x}La_xMnO_3$ manganites according to NMR data**

55Mn NMR spectra in the magnetically ordered state in $Sr_{1-x}La_xMnO_3$ (x=0, 0.02, 0.04) manganites have been obtained and the magnetic susceptibility has been measured. It has been shown that the microscopic phase separation into the antiferromagnetic matrix and ferromagnetic clusters, which can be presented as magnetic polarons, is observed in the long-range magnetic order region.

Session 3.18

SECTION 11
Magnetic memories

ROOM C

Chairman
D.Balaev

9.00–9.25

I11.1

***S.Nikitov* – Magnonics: a new research area in spintronics and spin wave electronics**

Recent extensive studies gives rise to a so-called magnonics. Here we present applications of spin wave devices for data processing in different magnetic structures: distributed periodic system, resonators, coupled waveguide systems, controllable magnetic structures.

9.25–9.50

I11.2

***M.Sahashi* – Insight into new magnetic recording principle with magnetoelectric writing**

9.50–10.15

I11.3

***V.Shavrov* – Experimental estimation of coefficient of performance (COP) of thermodynamic cycle on Gd in high magnetic fields**

One of the most important characteristic of magnetic refrigerating machines is the coefficient of performance of the process (COP) refrigeration. The purpose of the present work is to propose the new experimental technique for measurement of the COP of a magnetic material and to simulate the cycle based oh Gd in magnetic filed 12 T.

10.15–10.30 O11.1

N.Gusev – Ultrasensitive flux-gate magnetometer based on iron garnet film for biomedical applications

A new ultrasensitive flux-gate magnetometer, based on epitaxial iron garnet film, is developed. The high sensitivity of the sensor exceeding 200 fT/Hz^1/2 is shown in the rat heart magnetocardiography signal measurement. The main components of the MCG rat signal, R-peak value of about 10-pT, were recorded without time-averaging, which gives the opportunity to explore the cardiac rhythm abnormality.

10.30–10.45 O11.2

L.Naumova – Spin-flop state splitting in FeMn-based spin valves with synthetic ferrimagnet

The investigation of the spin-flop state splitting in synthetic ferrimagnet ($Co_{90}Fe_{10}$/Ru/$Co_{90}Fe_{10}$) has been performed on Ta/$Ni_{80}Fe_{20}$/$Co_{90}Fe_{10}$/ Cu/ $Co_{90}Fe_{10}$/Ru/$Co_{90}Fe_{10}$/$Fe_{50}Mn_{50}$/Ta spin valves. Realization of one or two spin-flop states was shown to depend on the mutual orientation of the field applied in thermomagnetic treatment and the initial pinning direction of the spin valve.

10.45–11.00 O11.3

L.Fetisov – Magnetoelectric energy harvesting devices

Energy harvesting devices have been developed to meet the energy needs of WSNs and remote monitoring devices. In this work we demonstrate energy harvesting device based on magnetoelectric effect (ME) in composite structures consisting of ferromagnetic (nickel, amorphous magnetic ally, galfenol and permendur) and piezoelectric layer (PZT-19).

11.00–11.15 O11.4

Yu.Fetisov – Nonlinear Magnetoelectric Effects in Ferromagnetic-Piezoelectric Structures and their Application for Magnetic Field Sensing

Nonlinear effects in composite ferromagnetic-piezoelectric layered structures caused by nonlinearity of magnetostrction are considered. Possibilities to use these effects for design of new high-sensitivity dc and ac magnetic field sensors are demonstrated.

11.15–11.30 O11.5

Yu.Skourski – Direct measurements of the magnetocaloric effect of $La(Fe, Co, Si)_{13}$ in pulsed magnetic fields

We report on magnetization, magneto-striction, and magnetocaloric effect of polycrystalline $LaFe_{11.74}Co_{0.13}Si_{1.13}$ and $LaFe_{11.21}Co_{0.65}Si_{1.11}$ compounds studied in both pulsed (up to 60 Tesla) and static magnetic fields. We were able to quantify the magnetoelastic coupling and, based on that, formulate the criterion distinguishing first- and second-order transitions.

Session 4.18

SECTION 5
Dynamics of spin systems and magnetic resonances

ROOM A

Chairman
A. Semisalova

12.00–12.15

O5.16

***D.Tsikalov* – High-frequency susceptibility in gradient thin films**

We numerically investigate effects of different profiles of the distribution of magnetic parameters along the film thickness on both the high-frequency susceptibility and the dependence of the fields of spin-wave resonances on the mode number n. The dependence of positions of the spin resonance modes on the mode number n is linear in n for the first few resonances, and then becoming a standard quadratic.

12.15–12.30

O5.17

***E.Vavilova* – Site disorder effect on the magnetism and ground state of the Kagome compound $YBaCo_3AlO_7$ stuied by NMR**

A metal oxide compound with a kagome-like magnetic structure $YBaCo_3AlO_7$ is a perspective object for a search of spin-liquid ground state due to the frustration of the magnetic sublattice. We studied the single crystal of $YBaCo_3AlO_7$ by nuclear magnetic resonance as well as by some complementary methods like ESR and magnetization measurements.

12.30–12.45

O5.18

***D.Kalyabin* – Magnetostatic spin waves in irregular narrow ferromagnetic waveguides**

The aim of the current work is to study magnetostatic surface spin wave propagation (MSSW) in a ferromagnetic films of varied width. We have investigated dynamics of MSSW propagation in such waveguides by theoretical and experimental technique.

12.45–13.00

O5.19

***A.Chlenova* – Magnetoimpedance and magnetic properties of soft magnetic CoFeNiCrSiB amorphous ribbons in different states**

Complex shape of MI response of the curves is typical for the ribbons with longitudinal effective anisotropy, but samples without treatment had a lower sensitive in relation to the external field and had "valley" - typical feature of the transverse anisotropy component.

13.00–13.15

O5.20

***A.Ognev* – Magnetic vortices and anti-vortices observed in domain walls of antiferromagnetically coupled trilayers**

In this work we report on an experimental evidence of vortices and anti-vortices in domain walls in Co/Ru/Co trilayers with AFM coupling and in-plane anisotropy. Series of Co(10nm)/Ru(tRu)/Co(10nm) trilayers with the Ru interlayer thickness of tRu=0.9, 1.3 and 2.0 nm was fabricated by magnetron sputtering in UHV. Magnetic properties were studied by MOKE, MFM and Lorentz TEM.

Session 5.18

SECTION 3

Magnetism of strongly correlated electronic systems

ROOM B

Chairman

V.Pudalov

12.00–12.25

I3.9

***E.Bauer* – Tuning magnetic instabilities of non-Fermi liquid $Ce_3Pd_4Si_4$ by pressure and substitution**

An experimental investigation of ternary $Ce_3Pd_4Si_4$ evidenced non-Fermi liquid. The ground state observed for this Ce system appears to be a result of mutual interactions of the crystalline electric field, of the Kondo effect and of RKKY interactions. A subtle change of the balance of these interactions e.g., by pressure or by substitutions is expected to trigger some instability, presumably of magnetic origin.

12.25–12.50

I3.10

***P.Alekseev* – Exotic magnetic ordering in strongly correlated systems**

Several examples of unusual magnetic ordering are presented and related models are discussed, in particular: the systems with induced long range ordering for crystal field defined singlet ground state metals; Kondo-insulators with possibility for formation of long range magnetic order below metal to insulator transition; systems with coexistence of magnetic order with intermediate valence state.

12.50–13.15

I3.11

***K.Kugel* – Spin and orbital structures in transition-metal compounds with face-sharing octahedra**

Characteristic features of the orbital and spin structures of transition metal compounds containing the chains of metal-oxygen face-sharing octahedra are discussed. For orbital doublets, we arrive at the spin-orbital Hamiltonian of the Heisenberg type having unexpectedly high symmetry: SU(4).

13.15–13.30

O3.3

***E.Moshkina* – Ordered and disordered magnetic phases coexistence in the quasi-low-dimensional oxyborate Cu_2MnBO_5**

Single crystals of new Cu_2MnBO_5 ludwigite have been synthesized by the flux method. The magnetic structure of Cu_2MnBO_5 has been studied using neutron powder diffraction. Thermal dependence of the specific heat has revealed a single small peak at T=77 K. Significant temperature hysteresis of magnetic phase transition was found.

Session 6.18

SECTION 9
Magnetic nanoparticles and granular systems

ROOM C

Chairman
K.Shaikhutdinov

12.00–12.25

O9.2

V.Stepanov – Power losses in a suspension of magnetic nanoparticles under a time-periodic field

Energy absorption due to viscous friction in a dilute suspension of single-domain ferromagnetic particles subjected to a time-periodic field is considered. The problem is treated in the framework of kinetic approach, by solving the rotary diffusion-like equation. The behavior of specific loss power (SLP) as a function of the field amplitude and frequency is investigated.

12.15–12.30

O9.3

E.Kovaleva – Quantum-chemical investigation of interface between C60 and LSMO

Spinterface between fullerene C60 and $La_{0.7}Sr_{0.3}MnO_3$ (LSMO) was studied by means of density functional theory. Co-existence of many different configurations was shown, and probabilities of their appearance were estimated. Key role of transition metal atoms in both binding between composite compartments and magnetic ordering in C60 molecule was discussed.

12.30–12.45

O9.4

G.Churilov – Nanodispersed powders of Fe-Ni particles with carbon shell

The results of synthesis and properties investigation of iron-nickel particles with carbon non-conduction cover are presented in this paper. It was shown that powders treated with ozone or acids easy lose the sp2 hybridization carbon cover. But sp3 hybridization carbon cover remains persistence and demonstrates dielectric properties.

12.45–13.00

O9.5

S.Yakushkin – Magnetic structure and size-effects in the system of epsilon-Fe_2O_3/SiO_2 nanoparticles

In the Boreskov Institute of Catalysis the epsilon-Fe_2O_3/SiO_2 system based on few nanometers epsilon-Fe_2O_3 supported nanoparticles was created for the first time that has no other detectable iron-oxide polymorphs. It was shown that the nanostructured epsilon-Fe_2O_3/SiO_2 system itself has complex magnetic structure.

Day 5. 19.08

PROGRAMME

8.15	**TRANSFER FROM THE CITY CENTRE HOTELS**	
9.00 – 9.40	**PLENARY TALKS**	Congress-hall, 82/9 Svobodny Av.
9.40 – 11.10	Session 1.19. **SECTION 7. Ultrafast magnetism**	**Room A**
	Session 2.19. **SECTION 10. Low dimensional magnetism and nanostructured materials**	**Room B**
	Session 3.19. **SECTION 12. Molecular magnetism**	**Room C**
11.10 – 11.40	**COFFEE BREAK**	79 Svobodny Av., hall of the Bld.1
11.40 – 13.00	**POSTER SESSION 3**	79 Svobodny Av., hall of the Bld.1.
	P3.1-P3.22, P5.1-P5.13, P9.1-P9.34, P11.1.-P11.11	*Chairman V.Zabluda*
13.00	**CLOSING OF THE EASTMAG-2016**	**Room A**
13.30–14.30	**LUNCH**	
14.30	**BUS TRANSFER TO THE CITY CENTRE HOTELS**	

PLENARY TALK

ROOM A

Chairman
S. Ovchinnikov

9.00–9.40

PI7

***S.Demokritov* – Excitation of magnetization dynamics by pure spin currents**

Here we review our recent experiments on the excitation of magnetization auto-oscillations by injection of pure spin currents in SHE-based devices and in nonlocal spin valve structures. We show that nonlocal-spin-injection oscillators exhibit a number of unique features making them significantly more promising in comparison with the spin-Hall oscillators.

Session 1.19

SECTION 7 Ultrafast magnetism

ROOM A

Chairman
S. Ovchinnikov

9.40–10.05

I7.4

***R.Mikhaylovskiy* – Terahertz nonlinear control of magnetic order mediated by infrared phonons and rare-earth electronic excitations**

We demonstrate that THz radiation can be used to efficiently control the magnetic order by resonant exciting the lattice and the electronic orbitals. The demonstrated mechanisms require neither special crystal symmetry nor multiferroic correlations. Our findings bring spin devices operating at terahertz clock rates into practical reach.

10.05–10.30 I7.5

I.Sandalov – **Theories of Ultrafast Demagnetization: Where we are?**

The review of currently known mechanisms for the explanation of the experiments on ultrafast demagnetization, discussion of the suggested theoretical approaches and remaining open questions are presented.

10.30–10.45 O7.2

A.Moskvin – **Dzyaloshinskii-Moriya coupling and related exchange-relativistic effects**

The talk is devoted to an overview of the microscopic theory of the DM coupling and other related exchange-relativistic effects such as exchange anisotropy, antisymmetric magnetoelectric coupling, antisymmetric magnetogyrotropic effects, and electron-nuclear antisymmetric supertransferred hyperfine interactions in strongly correlated 3d-based compounds.

10.45–11.00 O7.3

A.Malakhovskii – **Local magnetic properties of $Nd_{0.5}Gd_{0.5}Fe_3(BO_3)_4$ crystal in the excited states of Nd^{3+} ion**

Polarized absorption spectra of f-f absorption bands in the Nd^{3+} ion in the $Nd_{0.5}Gd_{0.5}Fe_3(BO_3)_4$ single crystal were studied as a function of temperature in the range of 2 – 40 K and as a function of magnetic field 0 – 65 kOe at 2 K. It was revealed that the local magnetic properties in the vicinity of the excited ion substantially depend on its electron state.

11.00–11.25 I7.6

Z.-H.Cheng – **Ultrafast Spin Dynamics of Fe-based Magnetic Thin Films**

In this work, the dynamic properties of the epitaxial Fe/MgO(001) magnetic films with thickness dependence of the in-plane magnetic anisotropy were performed.The Gilbert damping factor and magnetic anisotropy of different thickness epitaxial Fe/MgO(001) magnetic films are obtained by the frequency- and time-domain investigation (TRMOKE and VNA-FMR measurements).

Session 2.19

SECTION 10
Low dimensional magnetism and nanostructured materials

ROOM B

Chairman
A. Rinkevich

9.40–10.05 I10.10

F.Bartolomé – **Fe Magnetic Moment of Fe-Phthalocyanine on Ag(110) upon Oxygen Reduction Reaction**

Molecular overlayers on ordered substrates have a broad field of application in catalysis, sensing, molecular electronics, etc. In this contribution we report on the structural and magnetic changes along an oxydation-reduction cycle of several FePc submonolayer phases with different densities. We have studied the mechanisms of the ORR of FePc on Ag(110) by a combined SPM and XAS study

10.05–10.30 **I10.11**

***V.Gornakov* – Micromagnetic kinetics in patterned ferromagnet thin films**

The effects of shape and edges in magnetic elements in thin films and ferromagnetic/ antiferromagnetic heterostructures were studied. The magneto-optic images revealed three different types of the domain structure formation and evolution in the stripes and square meshes during their magnetization reversal. Both experimental and simulation results are discussed.

10.30–10.55 **I10.12**

***M.Medvedeva* – Non-equilibrium critical behavior of thin Ising films**

We study the non-equilibrium properties of Ising ferromagnetic films using Monte Carlo simulations by short-time dynamic method. Ageing effects were observed in non-equilibrium critical behavior. Former was carried out both from high-temperature and low-temperature initial states. A characteristic time of relaxation, which diverges at a transition temperature in the thermodynamic limit, is obtained.

10.55–11.20 **I10.13**

***R. Kremer* – Tuning the Magnetic and Structural Properties of the Ferromagnetic Quantum-Spin Chain $CuAs_2O_4$ by Hydrostatic Pressure**

$CuAs_2O_4$ is a new S=1/2 quantum-spin-chain with dominant nn ferromagnetic spin-exchange which undergoes long-range ferromagnetic ordering below 7.4 K.1. In order to tune the spin-exchange interactions we have applied hydrostatic pressure and investigated the response in the properties of $CuAs_2O_4$ by single-crystal synchrotron x-ray diffraction, Raman spectroscopy and SQUID magnetometry.

Session 2.19

SECTION 12
Molecular magnetism

ROOM C

Chairman
A.Sokolov

9.40–10.05 **I12.1**

***D.Buergler* – Hybrid molecular magnets formed by spin-dependent hybridization**

We discuss an alternative approach to molecular spintronics based on aromatic molecules adsorbed on ferromagnetic surfaces. Spin-dependent hybridization of molecular π-orbitals with spin-split d-orbitals of the substrate induces spin polarization thereby forming hybrid molecular magnets. We confirm this concept by studying single triphenyl-triazine molecules on Fe/W(110) by spin-polarized STM.

10.05–10.30 **I12.2**

***N.Perov* – Magnetic field effect on topochemical reactions**

The effect of a magnetic field on various topochemical processes is discussed in detail. The magnetic method of control for chemical reaction with magnetic nanoparticles is described. The results of reduction-oxidation of magnetic Co, Fe, Ni nanoparticles are analyzed.

10.30–10.45

O12.1

A. Kamzin – **Fe-based Core/shell Nanoparticles as Tunable Magnetic Particle for Biomedical Applications**

In this review we attempt to highlight the most popular and efficient synthesis approaches for magnetic C/S nanoparticles, which can be used in biomedical fields, such as MRI and drug delivery. In addition, building smart structures based on magnetic C/S nanoparticles will exhibit many new properties that will surely result in new applications with improved performance.

10.45–11.00

O12.2

C. Enachescu – **The mechanoelastic model for spin transition molecular magnets**

Here we focus on the recently developed mechanoelastic model and discuss its possibilities to characterize various phenomena in spin crossover molecular magnets, such as thermal hysteresis, photoexcitation or relaxation in dark. together with the cluster evolution. The particular case of nanoparticles is treated by considering them embedded in a polymer environment.

11.00–11.15

O12.3

A. Ageeva – **Spin chemistry study of lappaconitine derivatives photodegradation**

We have investigated a series of substituted lappaconitine by NMR, the CIDNP and photochemistry methods to test the hypothesis about the connection between the effectiveness of photodecomposition, defining phototoxicity, and the compounds structure.

POSTER SESSION 3

79 SVOBODNY AV., HALL OF THE BLD.1

Chairman V. Zabluda

11.40–13.00

P3.1-P3.22,
P5.1-P5.13,
P9.1-P9.34,
P11.1.-P11.11