

Radiation from Relativistic Electrons in Periodic Structures

September 15-20, 2019, Belgorod, Russia

Monday, September 16

	Belgorod State University Hall (BSU Hall)	
08:30	Registration	
09:00	Rector: Oleg N. Polukhin	10min
	Opening remarks	
	Session 1. GENERAL PROPERTIES OF RADIATION FROM RELATIVISTIC PARTICLES	
09:10	V. Serbo,	
	Radiative Processes with Electrons, Photons and Neutrons (<i>invited</i>)	30min
09:40	D. Karlovets,	
	Electromagnetic Field of a Vortex Electron and Non-paraxial Effects (<i>invited</i>)	30min
10:10	X. Artru,	
	Classical and Quantum Descriptions of Radiation from Relativistic Electrons in External Fields (<i>invited</i>)	30min
10:40	A. Baldin,	
	Applied Research at the LHEP JINR Accelerator Complex	30min
	(invited)	
	Coffee Break	
11:30	T. Kulevoy,	
	ARIES – Accelerator Research and Innovation for European	30min
	Science (<i>invited</i>)	
12:00	D. Sergeeva,	
	Observation of Coherent Terahertz Smith-Purcell and Grating	20min
	Transition Radiation from a Metasurface	

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12:20	S. Trofymenko,	
	Coherent Effects in the Ionization Loss of High-Energy Electron	20min
	Bunches	
12:40	A. Novokshonov,	20min
	Coherent OTR as a Tool for Transverse Bunch Size Measurements	2011111
	Lunch	
Ses	sion 6. COHERENT BREMSSTRAHLUNG AND CHANNELING RADIAT	ION
14:00	S. Dabagov.	
	Channeling of Relativistic Flectrons: from Basics to Applications	30min
	(<i>invited</i>)	
14:30	A. Sytov,	
	Channeling and Volume Reflection Radiation Generated by 855	20min
	MeV Electrons in Ultrashort Si and Ge Bent Crystals	
14:50	I. Kyryllin,	
	Investigation of the Influence of the Periodicity of Crystalline	20min
	Atomic Strings Arrangement on the Spectral and Spectral-	
	Angular Distribution of High-Energy Charge Particle Radiation in	
	Crystal	
15:10	N. Kalashnikov,	
	The Photorecombination Effect of the Ultrarelativistic	20min
	Channelling Electron	
15:30	V. Syshchenko,	
	Regular and Chaotic Motion Domains in the Channelling	20min
	Electron's Phase Space and Mean Level Density for Its Transverse	
	Motion Energy	
15:50	S. Abdrashitov	
	Positron Source based on Coherent Bremsstrahlung of 10-50	20min
	MeV Electrons	
	Coffee Break	
	Section 5 DIFERACTION RADIATION AND SMITH DUDCELL FEELCI	-
	Session J. DIFFRACTION RADIATION AND SMITH-FORCELL EFFECT	
16:30	A. Tishchenko,	20min
	Smith-Purcell Radiation from Active Gratings	
16:50	S. Uglov,	
	Diffraction Radiation Generation by the Internal Target of the	20min
	Cyclic Accelerator	
17:10	K. Vokhmyanina, A. Aryshev	
	Pre-bunched Relativistic Electron Beam by Dielectric Capillary	20min

17:30	M. Shevelev,		
	Generation of Monochromatic Radiation from a Multilayer	20min	
	Prismatic Target		
17:50	G. Sotnikov,		
	Focusing of Drive and Witness Bunches in Dielectric Waveguide	20min	
	Filled With Inhomogeneous Plasma		
	Coffee Break		
18:30	Poster Session I		
	POSTER SESSION I		
	Session 1. GENERAL RADIATION PROPERTIES FROM RELATIVISTIC PARTICLES		
1.	S. Abdrashitov		
	Quantum Approach for Orbital Angular Momentum of Channeling		
	Radiation from 255 MeV Electrons in Thin Si Crystal		
2.	K. Gevorgyan		
	The Channeling Radiation from Positron Bunch in Nanotubes Taking to		
	Account the Inhomogeneity of the Medium Polarization		
3.	. H. Khachatryan		
	Angular Distribution of High Power Radiation from a Charge Rotating		
4.	K. Korotchenko		
	Radiation of Twisted Photons from Planar Channeled Electrons		
5.	A. Kulikova		
	Hertz Tensor as a Basis for Spin Photonics in Terms of the Relativis	tic	
	Radiation Theory		
6.	R. Morita		
	Development of Yb-based Laser System for Crab Crossing Laser-Co	mpton	
	Scattering		
7.	D. Sergeeva , Radiation of Surface Wayes by Fast Electrons Crossing a Metasurfa	20	
	Session 2 CHEPENKOV PADIATION		
	Session 2: CHERENROV RADIATION		
8.	B. Alekseev	,	
	reasibility of Uptical Unerenkov Radiation for a Detection of Tokam	ак	
0	C Lazaronko		
9.	The Probability of Radiation of Twisted Photons in Dispersing Med	ia	
10	S. Gogolev	iu	
10.	Radiation Losses of Relativistic Electrons via Cherenkov Diffraction		
	Radiation Mechanism		

11.	K. Artyomov, A. Potylitsyn		
	Pic-Code Karat Simulation of Coherent Cherenkov Radiation From a		
	Bunch Passing Through a Hollow Conical Target		
	Session 3. TRANSITION RADIATION		
12.	R. Nazhmudinov		
	X-Ray Transition Radiation Produced by 2.8-Gev Electrons in a Multilayer		
	Aluminum Target and Diffracted in a Silicon Crystal		
13.	M. Sidnin		
	Effect of the Crystal Surface Spinning Relative to an Electron Direction at		
1/	M Bronnikova		
14.	On the Problem of Application of Diffracted Transition Radiation for		
	Indication of Relativistic Electron Beam Parameters		
15.	A. Shchagin		
	Crystalline X-Ray Resonator for Storage of Diffracted Transition Radiation		
	Session 4. PARAMETRIC X-RAY RADIATION		
16.	I. Vnukov		
	The effect of Reflection Asymmetry on the Output of Coherent Radiation of		
	Electrons in Crystals		
17.	A. Noskov		
	Coherent X-ray Radiation Excited by a Beam of Relativistic Electrons in a		
	Layered Periodic Structure		
	Session 5. DIFFRACTION RADIATION AND SMITH-PURCELL RADIATION		
18.	D. Garaev		
	THz Smith-Purcell Radiation from 1D and 2D Arranged Systems of		
	Microparticles		
19.	A. Grigoreva		
	Walls		
20	A Tarnovsky		
20.	Eikonal Approximation and the Conical Effect in Smith-Purcell Radiation.		
	Session 6. COHERENT BREMSSTRAHLUNG AND CHANNELLING		
21.	S. Abdrashitov		
	Muon Source Driven by Channeling Radiation		
22.	Yu. Kunashenko		
	Single-Photon Annihilation of Planar Channeled Positrons		
23.	A. Savchenko		
	Simulation of Positron Spectra of a Hybrid Positron Source		

24.	A. Lewandowski
	Quantum Features of Radiation at Small-Angle Reflection by Crystals
25.	N. Maksyuta
	Features of The Orientation Motion of Neutral Particles in Chiral
	Nanotubes
26.	N. Maksyuta
	Investigation of Canneling and Radiation of Charged Particles in Ionic
	Crystals with a Structure of Type Sodium Chloride
27.	K. Vokhmyanina
	Transport of Accelerated Electrons through Dielectric Nanochannels in
	PET Films



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BSU Hall			
	Session 2. CHERENKOV RADIATION		
9:00	P. Karataev,		
	Application of Cherenkov Diffraction Radiation for Charged	30min	
	Particle Beam Diagnostics (<i>invited</i>)		
09:30	A. Tyukhtin,		
	High-Frequency Radiation of Relativistic Charged Particle	30min	
	Bunches in Presence of Dielectric Objects: Methods and Examples	0011111	
	(invited)		
10:00	A. Potylitsyn,		
	Optical Cherenkov Radiation from an Inclined Plate as a Tool for	20min	
	Angular Beam Diagnostics		
10:20	G. Sotnikov,	20min	
	BBU Instability in Rectangular Dielectric Resonator		
10:40	K. Fedorov,		
	Noninvasive Longitudinal Beam Profile Diagnostic Using	20min	
	Cherenkov Diffraction Radiation at CLARA Facility		
	Coffee Break		
	Session 1. GENERAL PROPERTIES OF RADIATION FROM		
	RELATIVISTIC PARTICLES (continuation of the Section)		
11:20	A. Feshchenko,		
	Compton and Thomson Inverse Scattering as an X-ray Source:	30min	
	State of the Art and Perspectives (<i>invited</i>)		
11:50	M. Bondarenco,		
	Relationships Between Parameters of Single Atomic Scattering	20min	
	and Bremsstrahlung		

12:10	N. Kalashinikov,	
	Conversion of Relativistic Electron Energy into One Photon when	20min
	Interacting with Crystal	
12:30	P. Kazinskii,	
	Modified Baier-Katkov Method for Twisted Photon Radiation	20min
	Lunch	
15:00	E. Baldina,	
	Lobachevsky Space in Analysis of Relativistic Nuclear	20min
	Interactions. Directed Nuclear Radiation – a new Phenomenon	
	Coffee Break	
16:00	Poster Session II	
	POSTER SESSION II	
	Session 7. CRYSTAL-ASSISTED PROCESSES	
1.	N. Andreeva,	
	The Origin of Thermal Breakdown of Semiconductor Materials at	
	Electromagnetic Pulse Exposition	
2.	H. Gevorgyan,	
	Crystalline Undulator Radiation in "Water Window" Region	
3.	L. Gevorgyan,	. .
	The Spectral Characteristics of the Radiation Channeled Positron B	unch in
А	a Crystalline Sectional Undulator	
4.	1. I UKNIATUIIIN, First Observation of Costanting of Cos	Constal
	First Observation of Scattering of Sub-Gev Electrons in Ultrathin Si	Crystal
	at Fianar Alignment and its kelevance to crystal-Assisted 1D Rainb	UW
5	T Tukhfatullin	
5.	Half-Waye-Crystal Channeling of Polativistic Hoavy Ions at Super E	BC
	CSI/FAID and Possible Applications	
6	A Rusetskii	
0.	Channeling of Fast Neutrons in Crystalline Structures of Textured C	VD
	Diamond	
	2.444444	

	Session 8. APPLICATIONS OF MONOCHROMATIC X-RAY, GAMMA RAY
	TERAHERTZ BEAMS PRODUCED AT ELECTRON ACCELERATORS
7.	A. Baulin, Dose-Enhancing Agent for Radiotherapy at Orthovoltage X-Rays Irradiation
8.	V. Bleko, Particle Identification on Spin Physics Detector at the NICA Collider
9.	E. Bolotov , Detector Simulation for the MPD Experiment
10.	A. Bulavskaya, Determination of Wide-Aperture Electron and X-Ray Beams Transverse
	Sizes
11.	Yu. Cherepennikov, Changes of 3d-Printed Plastic Samples Mechanical Properties Caused by 6 MeV Electron Beam Irradiation
12.	Yu. Cherepennikov, Determining f Electron Beam Percentage Depth Dose In Media With Varied Density By Longitudinal Arranged Dosimetry Film: Simulation Results
13.	S. Chistyakov, Compensating Filter for Computed Tomography of core Samples from Oil and Gas Fields
14.	N. Filatov, Simulation of Cone Beam Computed Tomography of Core Samples from Oil and Gas Taking into Account Spectral Information in Geant4
15.	O. Ivashchuk,
	Semiconductor Diode for Heating of Pyroelectrics in Pyroelectric Accelerator of Charged Particles, X-ray, and Neutron Sources
16.	O. Ivashchuk, Miniature Pyroelectric X-ray Source
17.	O. Ivashchuk, Piezoelectric Quartz X-ray Source
18.	O. Ivashchuk, Pyroelectric Impulse Accelerator
19.	I. Kishchin.
	Installation «Rontgen 1» for the Study of Radiation Processes of Interaction of Relativistic Electrons with Matter
20.	V. Kiziridi, Method of Diagnostics of Electron Beams of Femto-, Attosecond Duration
21.	T. Muradyan, Obtaining Parallel X-Ray Beams with Controllable Quantity and Distances Under the External Acoustic Fields in Quartz Crystals

22.	R. Nazhmudinov,
	Measurement of 1-GeV Electrons Ionization loss Spectra in a CdTe Crystal
	with a Thickness of 1 mm
23.	E. Simakov,
	Radiation from a Charged Particle Bunch Moving in Presence of a
	Corrugated Surface with Small Period
24.	Y. Tadenuma,
	Study on Coherent THz Radiation Using Tilt Control of Electron Beam
25.	T. Tamba,
	Durability Improvement of Cesium Telluride Photocathode for an Rf-gun

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Wednesday, September 18

HOTEL Hall			
	Session 3. TRANSITION RADIATION		
9:00	T. Alekhina,		
	Radiation of a Bunch in a Waveguide Partly Filled with an	20min	
0.00	Anisotropic Dispersive Medium		
9:20	S. Trofymenko,	20.	
	Manifestation of the Formation Length Effect for X-ray Transition Rediation by 1–6 GeV Electrons in Periodic Multifoil Rediators	20min	
9.40	A Savchenko		
5.10	Effect of Interference in Angular Distribution and New	20min	
	Opportunities for Transition Radiation Detectors		
10:00	A. Gogolev		
	Application of Timepix Detector for Measurement of X-rays	20min	
	Produced by a Low-Intensity Electron Beam Passing Through a		
	Periodic Target		
10:20	D. Shkitov,		
	Monochromaticity of Transition Radiation and Diffraction	20min	
	Radiation from Grating		
10:40	A. Potylitsyn,		
	Characteristics of Smith-Purcell Radiation and Grating Transition	20min	
	Radiation from Gratings with Variable Profile		
Coffee Break			
12:00	Symposium Excursions		



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Thursday, September 19

BSU Hall			
Ses	Session 8. APPLICATIONS OF MONOCHROMATIC X-RAY, GAMMA RAY AND TERAHERTZ BEAMS PRODUCED AT ELECTRON ACCELERATORS		
09:00	S. Polozov,		
	Russian Project of 4th Generation Synchrotron Light Source SSRS-4: Main Goals and General Description (<i>invited</i>)	30min	
09:30	A. Lobko , GEANT4 Modeling of Light Collection in RWO Scintillator Crystal Wrapped by a Retro-reflective Film	20min	
09.50			
09.00	Pre-bunched Electron Beam Generation and Application for Accelerator-based THz radiation Source	20min	
10:10	A. Oleinik,		
	Electron and X-ray Source Based on a Pyroelectric Single Crystal Driven by a Periodically Varying Temperature	20min	
10:30	A. Baulin,		
	Dose-Enhancing Agent for Radiotherapy at 6 and 10 MV Medical Linac	20min	
	Coffee Break		
11:10	S. Stuchebrov,		
	Measurement of Wide-Aperture X-ray Beam Trasverse Profile	20min	
	Based on Multiangular Wire Scanning		
11:30	L. Grigoryan,		
	Self-amplification of Radiation from an Electron Bunch Inside a Waveguide Filled with Periodic Medium	20min	
11:50	V. Kocharyan,		
	2D Focusing of Reflected Hard X-rays and Thermal Neutron Beams in the Presence of External Temperature Gradient	20min	

12:10	M. Negodaev,	
	Investigation of the Interaction of ion Beams with Deuterated	20min
	Crystal Structures at the HELIS Facility	
	Lunch	
14:00	O. Ivashchuk,	20min
	Piezoelectric Transformer for Generation of X-rays in Vacuum	2011111
14:20	A. Targonsky,	
	Adaptive X-ray Optical Elements Based on Longitudinal and	20min
	Transverse Acoustic Waves in the KHz and MHz Frequency	_ • • • • • • • • • • • • • • • • • • •
	Ranges	
	Soccion 7 COVSTAL ASSISTED DDOCESSES	
	Session 7: CRTSTAL-ASSISTED FROCESSES	1
14:40	Yu. Chesnokov,	20min
	Recent Advances of Crystal Channeling in Accelerating Science	2011111
15:00	A. Shchagin,	
	Measurements of Charge of Particles by a Semiconductor	20min
	Detector	
15:20	I. Vnukov,	
	Possible Method of Spatial Sizes Measurement of Relativistic	20min
	Electrons Beam with Small Longitudinal Bunch Length	
	Coffee Break	T
16:00	A. Shchagin,	
	Application of Semiconductor Detectors with Smoothly	20min
	Tunable Thickness in Space Telescope of Relativistic Charged	
16.20	Particles	
16:20	M. Romagnoni, Scintillation Simul Stuars Enhancement in an Asially Oriented	20 :
	Load Tungetate Crystal	20min
16.40		
16:40	A. Mazzolari, Manufacturing of Silicon Crustals for Stearing of Illtra High	20
	Fnergy Particle Beams	20min
17.00		
17:00	Angular Anisotrony of Multinle Scattering in a Crystal	20min
19.00	Sumposium Dinnor	
17.00	Symposium Dinner	



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Friday, September 20

HOTEL Hall		
Session 4. PARAMETRIC X-RAY RADIATION		
10:00	S. Blazhevich , Dynamical Effect of Asymmetry in the Parametric X-rays Radiation Generated by Relativistic Electrons in a Single- Crystal Target	20min
10:20	E. Irribarra , Diffraction of Real and Virtual Photons in Crystalline Powders	20min
10:40	SUMMARIES	40min
11:20	P. Karataev , "RREPS-19" Proceedings publication	20min
11:40	Coffee Break	