



*XIV International Symposium "Radiation from Relativistic  
Electrons in Periodic Structures"*

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*VIII International Conference "Electron, Positron, Neutron and  
X-ray Scattering under the External Influences"*

## **SCIENTIFIC PROGRAMME**



*17–22 September, 2023*  
*Yerevan–Tsaghkadzor, Armenia*

<b>DATE</b>	<b>MORNING</b>	<b>AFTERNOON</b>	<b>EVENING</b>
<b>September 18</b> <i>Monday</i>	Registration 07:00 – 08:30 Trip to Yerevan 09:00 Opening Conference and School Greeting Speech 10:00	Oral Session	Poster Session
<b>September 19</b> <i>Tuesday</i>	Oral Session	Oral Session	Poster Session
<b>September 20</b> <i>Wednesday</i>	Oral Session	Excursion	
<b>September 21</b> <i>Thursday</i>	Oral Session	Oral Session	Conference Dinner
<b>September 22</b> <i>Friday</i>	Oral Session	Closing	Departure
<b>September 23</b> <i>Saturday</i>	<b>Trip to Meghri</b>		

**SEPTEMBER 18, MONDAY****07:00 – 08:30 REGISTRATION****09:00 TRIP TO YEREVAN****10:00****OPENING CONFERENCE AND GREETING SPEECH IN THE NATIONAL ACADEMY OF SCIENCES OF THE REPUBLIC OF ARMENIA*****INVITED TALKS******Chairman: Dr. Vahan Kocharyan*****10:20****DABAGOV Sultan**  
INFN, ITALY

Channeling X-rays for Tomographic Studies

25  
min**10:45****YU Tongpu**  
NUDT, CHINA

All-Optical Dense GeV Positron Sources

25  
min**11:10****KARATAEV Pavel**  
RHUL, UK

FLAP Collaboration: Fundamental and applied Linear Accelerator Physics Collaboration

25  
min**11:35****GOGOLEV Alexey**  
TPU, RF

Problems and Solutions of Digital Core Research

25  
min**12:00****POTYLITSYN Alexander**  
TPU, RF

Monochromatic Cherenkov Radiation from Radiations with Frequency Dispersion

25  
min**12:50*****TRIP TO TSAGHKADZOR*****14:00*****LUNCH******ORAL SESSION******Topic A.  $e^-/e^+$  beams interaction in solids******Chairman: Dr. Pavel Karataev*****15:00****SAHARIAN Aram**  
IAPP NAS RA

Generation of Surface Polaritons on Cylindrical Interfaces

20  
min**15:20****GARAEV Damir**  
MEPhI, RF

On-Chip Beam Position Monitor Based on Smith-Purcell Radiation

20  
min**15:40****SARGSYAN, Anush**  
IAPP NAS RA

Peculiarities of Spectral-Angular Distribution of Coherent Radiation by a Train of Electron Bunches Crossing a Conducting Ball

20  
min**16:00****TISHCHENKO Alexey**  
MEPhI, RF

Smith-Purcell Radiation from Surface Plasmons

20  
min**16:20*****COFFEE BREAK***

**16:40*****POSTER SESSION 1***

<b>SHAPOVALOV Pavel</b> MEPhI, RF	Diffraction Radiation of a Charged Particle from a 1D Fractal Diffraction Grating
<b>ASHANIN Ilia</b> MEPhI, RF	Design and Simulation of a S-Band RF Photogun for a Linac –Injector for the USSR FEL
<b>SAVCHENKO Aleksandr</b> MEPhI, RF	Geant4 Implementation of Channeling Radiation in Classical Description
<b>KIDANOVA Ekaterina</b> BSU, RF	Soft X-rays Produced by Relativistic Electrons in Multilayer Structures
<b>SAVCHENKO Aleksandr</b> MEPhI, RF	Angular Distribution of Non-Dipole Axial Channeling Radiation
<b>BLEKO Veronika</b> JINR, RF	Application of Optical Cherenkov Radiation for Ion Beam Diagnostics
<b>SHEVELEV Mikhail</b> TPU, RF	Large-angular Emission of Quasi-Monochromatic Ultra-Soft X-ray from Multilayer Structure under Irradiation of 5.7 MeV Electrons
<b>SHEVELEV Mikhail</b> TPU, RF	Spectrum of Coherent VUV Radiation Generated by 5.7 MeV Electrons in the Periodic Structure of a Multilayer X-ray Mirror
<b>CHEREPENNIKOV Yury</b> TPU, RF; IAPP NAS, RA	Prospects of Corundum Crystals Application as Cherenkov Radiators
<b>BORIN Vladislav</b> BUDKER INP, RF	Beam Parameters Measurement at Novosibirsk FEL Facility
<b>MAKSYUTA Mykola</b> KNU, UKRAINE	Calculation Of Spontaneous Emission During Channeling of Relativistic Positrons in Non-Chiral Nanotubes using a Quadratic Approximation
<b>BOGDANOV Oleg</b> TPU, RF	Cherenkov Radiation from Relativistic Heavy Ions with Taking Account of Slowing-Down in Terms of the Diffraction Theory
<b>NOZDRIN Mikhail</b> JINR, RF	Project of the Source of Relativistic Electrons with Angular Momentum
<b>VLADIMIROV Mikhail</b> MEPhI, RF	Electron Charge Dynamics of the Semiconductor Photocathode During the Laser-Induced Photoemission
<b>STUCHEBROV Sergei</b> TPU, RF	Evaluation of the Possibility of a Multichannel Detector Application for Electron Beam Profile Measurement by the Multi-Angle Scanning Method
<b>ARUTUNIAN Suren</b> AANL(YerPhi); CANDLE, RA	Observation of Embrittlement of a Stretched Metallic Wire by Measuring the Frequency of its Natural Oscillations

<b>VARDANYAN Julietta</b> IAPP NAS, RA	On the Possibility of Using Corundum to Create Sensitive VUV Detectors
<b>KILMETOVA Irina</b> NRC “Kurchatov Institute”, RF	Compact REPM Structures for Synchrotron Radiation Source
<b>VUKOLOV Artem</b> TPU, RF	Microtron Experimental Facility at Tomsk Polytechnic University
<b>ABAKUMOV Yakov</b> NRC “Kurchatov Institute”, RF	Design and Modelling of a Prototype U27 Undulator for the SYLA Project
<b>KOMLEV Aleksei</b> NRC “Kurchatov Institute”, RF	Different Methods for Studying the Magnetic Properties of Undulator Systems for the Synchrotron “SILA”
<b>VNUKOV Igor</b> BelSU, RF	Effect of Crystal Reflectivity on the Angular Distribution of Diffracted Transition Radiation from Relativistic Electrons
<b>ĐURNIĆ Blazo</b> University of Novi Sad, SERBIA	Feasibility of Using Optical Cherenkov Radiation for Non-Relativistic Ion Beam Diagnostics
<b>YARALOV Victor</b> AANL(YerPhi), RA	Coherent Radiation of Electrons Channeled in Crystals in External Fields

## ***SEPTEMBER 19, TUESDAY***

### ***ORAL SESSION***

#### ***Topic A. e<sup>-</sup>/e<sup>+</sup> beams interaction in solids***

***Chairman: Dr. Alexander Shchagin***

<b>9:00</b>	<b>LIU Weihao</b> NUAA, CHINA	Electron Beam Acceleration Driven by Self-Generated Cherenkov THz Pulse <b><i>(Invited Talk)</i></b>	30 min
<b>9:30</b>	<b>POTYLITSYN Alexander</b> TPU, RF	Cherenkov Radiation and Transition Radiation from Tilted Corundum Plate	20 min
<b>9:50</b>	<b>GRIGORYAN Levon</b> IAPP NAS, RA	Quasi-Coherent Radiation from a Train of Electron Bunches Inside a Waveguide Partially Filled with Dielectric	20 min
<b>10:10</b>	<b>SAHARIAN Aram</b> IAPP NAS, RA	Quasidiscrete Spectrum Cherenkov Radiation from a Charge Moving inside a Dielectric Waveguide	20 min
<b>10:30</b>	<b>SHAPOVALOV Pavel</b> MEPhI, RF	Cherenkov X-ray Radiation in a Fractal Medium	20 min

<b>10:50</b>	<b>SAVCHENKO Aleksandr</b> MEPhI, RF	Cherenkov Particle Detector Based on Resonant Elements	20 min
<b>11:10</b> <i><b>COFFEE BREAK</b></i>			
<b>Topic A. <math>e^-/e^+</math> beams interaction in solids</b> <b>Chairman: Prof. Aram Saharian</b>			
<b>11:30</b>	<b>LOBKO Alexander</b> INP BSU, BELARUS	Generation of Superradiant Parametric X-rays (SPXR)	20 min
<b>11:50</b>	<b>VNUKOV Igor</b> BelSU, RF	Use of Parametric X-ray Radiation of Electrons in Crystals to Determine the Parameters of Imaging plates	20 min
<b>12:10</b>	<b>STANITZKI Marcel</b> DESY, GERMANY	The Main Characteristics of the Electron/Positron Beams at the DESY Test Beam ( <i><b>Zoom, Invited Talk</b></i> )	20 min
<b>12:30</b>	<b>POTYLISINA-KUBE Natalia</b> DESY, GERMANY	Administrative Modalities to Get Access to the DESY TB in frame of the EURO-Labs TA Program ( <i><b>Zoom</b></i> )	20 min
<b>12:50</b>	<b>SYTOV Alexei</b> INFN, ITALY; KISTI, Korea	The Design of a Crystal-Based Extraction of 6 GeV Electrons for the DESY II Booster Synchrotron ( <i><b>Zoom</b></i> )	20 min
<b>13:10</b>	<b>ALI Majid</b> RHUL, UK	Identification of Unknown Material by X-ray Fluorescence Analysis with a Pyroelectric X-ray Generator	20 min
<b>13:30</b> <i><b>LUNCH</b></i>			
<b>Topic A. <math>e^-/e^+</math> beams interaction in solids</b> <b>Chairman: Prof. Liu Weihao</b>			
<b>15:00</b>	<b>SHEVELEV Mikhail</b> TPU, RF	Coherent Transition Radiation from Finite-Size Screen in the Prewave Zone	20 min
<b>15:20</b>	<b>SERGEEVA Daria</b> MEPhI, RF	Transition Radiation from Hollow Beams	20 min
<b>15:40</b>	<b>SHCHAGIN Alexander</b> DESY, GERMANY	Volume Reflection Undulator	20 min
<b>16:00</b>	<b>STUCHEBROV Sergei</b> TPU, RF	Electron Beam Profile Determination by Multi-Angle Scanning Using Scintillation Optical Fiber	20 min
<b>16:20</b>	<b>OLEINIK Andrei</b> BSU, RF	Quasi-Continuous Particle Generation in a Pyroelectric Accelerator	20 min
<b>16:40</b> <i><b>COFFEE BREAK</b></i>			

**17:00****POSTER SESSION 2**

<b>BULAVSKAYA Angelina</b> TPU, RF	The Electron Beam Propagation through 3D-Printed Plastic Samples with Different Infill Patterns
<b>MILOICHIKOVA Irina</b> TPU, RF	Simulation and Experimental Results of Electron Beam Interaction with 3D-Printed Samples Made of Modified Plastics
<b>SMOLYANSKIY Vladimir</b> TPU, RF	Imitation Model of Source Information Formation in High Energy Digital Radiography and Computer Tomography Systems
<b>LEVONYAN Levon</b> YSU, RA	Study of Phase Objects by Dynamical Diffraction of a Spherical X-ray Wave in a Crystal Using a Temperature Gradient
<b>SMOLYANSKIY Vladimir</b> TPU, RF	New Microfocus Source Based on a Betatron for Hard X-ray Imaging
<b>BADALYAN Anush</b> AANL(YerPhi), RA	Investigation of the Radiation Resistance and Optical Properties of New Composite Thermal Barrier Coatings
<b>BEZHANOVA Liana</b> IAPP NAS, RA	The Molecular Mechanism of Smectisation and Regulation of Polymorphism in Nematic Liquid Crystal Systems
<b>NOREYAN Serob</b> IAPP NAS, RA	Absorption Characteristics of Diffracted X-ray Radiation in a Quartz Crystal at an External Temperature Gradient
<b>ARAKELYAN Mileta</b> YSU, RA	Dynamics of Interacting Solitons
<b>BAKSHIYAN Tiruhi</b> IAPP NAS, RA	Formation of Medical Radioisotopes $^{111}\text{In}$ in Photonuclear Reactions
<b>HOVHANNISYAN Gohar</b> YSU, RA	Proton Induced Reactions on $^{114}\text{Sn}$ and $^{120}\text{Sn}$ Targets
<b>HAYRAPETYAN Yeghisabet</b> IAPP NAS, RA	Single-Channel High-Precision Laser Rangefinder
<b>HAYRAPETYAN Yeghisabet</b> IAPP NAS, RA	Tuning of the Resonant Frequency of Light Modems on Volumetric Resonators
<b>SUKIASYAN Ruzan</b> IAPP NAS, RA	$\text{Li}_2\cdot 3\text{IO}_3\cdot \text{H}_3\text{O}$ : Crystal Structure and IR Spectrum
<b>CHILINGARYAN Ruben</b> IAPP NAS, RA	Investigation of Sputtering Processes using Acoustoplasmic Magnetrons
<b>MKHITARYAN Samvel</b> IAPP NAS, RA	On The Suitability of Various Recording Methods and Devices for Recording of Seismic Signals

<b>SHAPOVALOV Pavel</b> MEPhI, RF	Computer Modeling of a Pyroelectric Accelerator
<b>ABRAHAMYAN Aleksan</b> IAPP NAS, RA	Wake Acceleration in Cold Acoustoplasma
<b>SAHAKYAN Kristine</b> IAPP NAS, RA	Using the Theory of Catastrophes in Experimental Researches
<b>BOGDANOV Oleg</b> TPU, RF	Orbital Angular Momentum of Radiation from Relativistic Electrons Axially Channeled in Thin <100> Si Crystal
<b>GRIGORYAN Syuzi</b> IAPP NAS, RA	X-ray Study of Structural Changes in the Liquid-Crystal System AOT-Mixed Solvent under the Influence of Dimethyl Sulfoxide (DMSO)
<b>DANGHYAN Astghik</b> IAPP NAS, RA	Determination of Energy Band Gap of $\alpha$ -LiIO <sub>3</sub> doped with L-Arg and L-Nitroarginine Amino Acids using Diffuse Reflectance Spectroscopy
<b>ARAMYAN Artur</b> IAPP NAS, RA	On the Occurrence in a Dielectric Material of a Special State with a Negative Electric Capacitance
<b>GRIGORYAN Syuzi</b> IAPP NAS, RA	Influence of P-nitroaniline on the Structure of the Liquid Crystal of the Sodium Salt of di-(2-ethylhexyl) Sulfosuccinic Acid (AOT) /N-heptane-Water System
<b>HOVHANNISYAN Martik</b> IAPP NAS, RA	Distributions of Quasars as an Indicator of the Homogeneity or Inhomogeneity in the Universe
<b>DYUBKOV Vyacheslav</b> MEPhI, RF	Toward 100 MeV MEPhI's Compton Source
<b>KARPOV Maxim</b> LPI, RF	Application of Photonic Crystals for Generation of Broadband Radiation at the Linac-200 Linear Accelerator
<b>AMIROV Abdulkarim</b> NRC "Kurchatov Institute", RF	3D Magnetic Field Mapping for Permanent Magnet Undulators
<b>SEDRAKYAN Armen</b> NPUA, RA	Some New Ways to Obtain High Temperature Superconductors
<b>SEDRAKYAN Armen</b> NPUA, RA	A Probable Appearance of Malus's Law for Inhomogeneous Crystals



## **SEPTEMBER 20, WEDNESDAY**

### **ORAL SESSION**

#### **Topic C. $e^-/e^+$ , X-ray, THz, and Neutron Based Applications**

**Chairman: Prof. Aleksandr Potylitsyn**

<b>9:00</b>	<b>LIU Ke</b> NUDT, CHINA	Twisted Radiation from Nonlinear Thomson Scattering with Arbitrary Incident Angle ( <i>Invited Talk</i> )	30 min
<b>9:30</b>	<b>DABAGOV Sultan</b> INFN, ITALY	Coherent Radiation at Electron Channeling in OL as a Mechanism to Increase the Laser Intensity	20 min
<b>9:50</b>	<b>SYSHCHENKO Vladislav</b> BelSU, RF	Mixed (Regular and Chaotic) Dynamics under the Channeling of the High Energy Positrons in [100] Direction of the Silicon Crystal and Podolskiy–Narimanov Distribution	20 min
<b>10:10</b>	<b>SYSHCHENKO Vladislav</b> BelSU, RF	Dynamical Chaos and Level Splitting under the Channeling of the High Energy Positrons in [100] Direction of the Silicon Crystal	20 min
<b>10:30</b>	<b>COFFEE BREAK</b>		
<b>11:00</b>	<b>EXCURSION</b>		

## **SEPTEMBER 21, TUESDAY**

### **ORAL SESSION**

#### **Topic B. X-ray and Neutron Scattering in Crystals**

**Chairman: Prof. Sultan Dabagov**

<b>9:00</b>	<b>KULIKOV Anton</b> FSRC "C&F", RF	Possibilities of Laboratory and Synchrotron Diagnostics of Crystalline Materials under the External Influences	20 min
<b>9:20</b>	<b>ELIOVICH Yan</b> FSRC "C&F", RF	Adaptive X-ray Optical Elements Based on Bending Piezoactuators: Possibilities and Prospects of Practical Application	20 min
<b>9:40</b>	<b>TROUNI Karapet</b> IAPP NAS, RA	Dynamic Diffraction of X-rays and Slow Neutrons in Crystals with Continuous Deformation Field	20 min

<b>10:00</b>	<b>SNEGIREV Nikita</b> FSRC “C&F”, RF	Synchrotron X–ray Diffraction Diagnostics of Single–Crystal Materials under the External Magnetic Field	20 min
<b>10:20</b>	<b>PILYAK Fedor</b> FSRC “C&F”, RF	A Complex X–ray Diffraction Technique for Studying Electrophysical Properties and Photovoltaic Processes in Crystals	20 min
<b>10:40</b>	<b>COFFEE BREAK</b>		
<b>Topic B. X–ray and Neutron Scattering in Crystals</b>			
<b>Chairman: Prof. Artak Mkrtchyan</b>			
<b>11:00</b>	<b>LOBKO Alexander</b> INP BSU, BELARUS	New Materials for Radiative Applications	20 min
<b>11:20</b>	<b>SAFONOV Anton</b> NRC “Kurchatov Institute”, RF	New Concept of Local and Time–Resolving Structural Diagnostic of Nanostructures at high–Brilliance Synchrotron Sources Based on Kossel Effect in Multilayers	20 min
<b>11:40</b>	<b>BLEKO Vitold</b> JINR, RF	Characteristics of a Neutron Source Based on an Electron Accelerator LINAC–200	20 min
<b>12:00</b>	<b>MAZZONI Stefano</b> CERN, SWITZERLAND	Cherenkov Diffraction Radiation for Beam Diagnostics ( <i>Zoom, Invited Talk</i> )	30 min
<b>12:30</b>	<b>MKHITARYAN Samvel</b> IAPP NAS, RA	A New Method for Revealing the Structure of the Defocusing Pattern Arising in X–ray L–L–L Interferometers	20 min
<b>13:00</b>	<b>LUNCH</b>		
<b>Topic C. <math>e^-/e^+</math>, X–ray, THz, and Neutron Based Applications</b>			
<b>Chairman: Prof. Alexander Lobko</b>			
<b>15:00</b>	<b>BOGDANOV Oleg</b> TPU, RF	Orbital Angular Momentum Radiation of Relativistic Electrons in the Laser Wave Field with Linear Polarization.	20 min
<b>15:20</b>	<b>ALOYAN Lusine</b> YSU, RA	The Influence of Porphyrins on DNA Damage Induced by Electron Beam	20 min
<b>15:40</b>	<b>HARUTYUNYAN Vardan</b> IAPP NAS, RA	Electrical, Dielectric and Nonlinear Optical Properties of SrB4O7	20 min
<b>16:00</b>	<b>BADALYAN Anush</b> AANL(YerPhi), RA	Proton Irradiation Tolerance of Lead Halide Perovskites	20 min
<b>18:00</b>	<b>CONFERENCE DINNER</b>		

## ***SEPTEMBER 22, FRIDAY***

### ***ORAL SESSION***

***Topic C.  $e^-/e^+$ , X-ray, THz, and Neutron Based Applications***

***Chairman: Prof. Vladislav Syshchenko***

<b>9:00</b>	<b>SHEN Baifei</b> SHNU, CHINA; SIOM CHINA	Positron Acceleration by Terahertz Wave and Electron Beam in Plasma Channel <i>(Invited Talk)</i>	30 min
<b>9:30</b>	<b>GAVRILENKO Dmitrii</b> MEPhI, RF	Interaction of an Electron with Unipolar Pulses of Arbitrary Shape	20 min
<b>9:50</b>	<b>LALAYAN Asatur</b> YSU, RA	Diffraction of Light by a Slit in Anisotropic Media with Closed and Open Wave Vector Surface	20 min
<b>10:10</b>	<b>KHACHATRIAN Ashot</b> NPUA, RA	The Far Field Diffraction of a Plane Wave on a System of Randomly and in Average Periodically Located Point Scatterers: The Debye–Waller Factor.	20 min
<b>10:30</b>	<b>ARUTUNIAN Suren</b> AANL(YerPhi), RA; CANDLE, RA	Electric Field Lines of the Helical Undulator	20 min
<b>10:50</b>	<b><i>CLOSING CONFERENCE</i></b>		
<b>11:30</b>	<b><i>COFFEE BREAK</i></b>		
<b><i>DEPARTURE</i></b>			
<b><i>DEPARTURE</i></b>			
<b><i>DEPARTURE</i></b>			

## ***SEPTEMBER 23, SATURDAY***

***Trip to Meghri for participants of the  
International Scientific School named after G.A. Askaryan***



RREPS – 23 & Meghri – 23