




PROGRAM
12th International Symposium “Optics & its Applications” (OPTICS-12)
October 15-19, 2024, Armenia

Tuesday 15.10. NAS <i>24 Marshall Baghramian Ave.</i>	Wednesday 16.10. IAPP of NAS <i>25 Hr. Nersisyan St.</i>	Thursday 17.10. YSU <i>1 Alek Manukyan St.</i>	Friday 18.10. AANL <i>2 Alikhanian Brothers St.</i>	Saturday 19.10. IAPP of NAS <i>25 Hr. Nersisyan St</i>
09:30-10:00 REGISTRATION	08:30-14:00 EXCURSION	09:00-09:30 A. Sargsyan	09:00-13:00	09:00-09:30 D. Ghazaryan
10:00-10:20 OPTICS-12 Opening	14:00-15:00 Lunch	09:30-10:00 D. Hayrapetyan	Lab Tours	09:30-10:00 D. Blaschke
10:20-11:00 T. Shahbazyan	15:00-15:30 M. Aghayan	10:00-10:30 P. Mantashyan		10:00-10:30 H. Sarkisyan
11:00-11:20 Coffee-break	15:30-16:10 4 Students talks (10') N. Marinin	10:30-11:00 Coffee-break		10:30 Closing
11:20-12:00 R. Sobolewski	A. Nahapetyan F. Optolowicz	11:00-12:20 8 Students talks (10')		&
12:00-12:30 A. Papoyan	H. Badalyan	N. Kourian L. Pantsulaia A. Badalyan Z. Adamyan	13:00-14:00 Lunch	Farewell Party
12:35-12:45 Group Photo 	16:10-16:40 Coffee-break	N. Gharibyan E. Ryabkov B. Mahato	IAPP of NAS <i>25 Hr. Nersisyan St.</i>	12:30-15:00
12:45-15:00 Lunch		S. Rizos	14:00-14:40 S. Dabagov	Lab Tours
IAPP of NAS <i>25 Hr. Nersisyan St.</i>	16:40-17:10 3 Students talks (10')	12:20-14:00 Lunch	14:40-15:10 K. Sokolov	
	M. Manvelyan D. Darmoroz	14:00-14:40 T. Galstian	15: 10-15:30 H. Gharagulyan	
15:00-18:00 Poster Session & Student chapters Poster Session	H. Mikayelyan	14:40-15:10 T. Dornheim	15:30-15:50 Coffee-break	
18:00-19:00 Welcome Party	19:00 Symposium Dinner	15:10-15:30 S. Zhamkochyan	15:50-16:10 A. Saharian	
		15:30-15:50 Coffee-break	16:10-16:30 L. Grigoryan	
		15:50-16:20 A. Babajanyan	16:30-16:50 L. Aloyan	
		16:20-16:40 E. Aleksanyan	16:50-17:10 A. Vartanian	
		16:40-17:00 A. Asatryan	17:10-17:30 A. Kuzanyan	
		17:00-17:20 H. Parsamyam	17:30-17:50 K. Aramyam	
		17:20-17:40 N. Margaryan		

Plenary Talks

- 1) **Sultan Dabagov** (INFN – Laboratori Nazionali di Frascati, Italy)
Channeling as Novel Optical Solution for Beams and Radiations
- 2) **Tigran Galstian** (Université Laval, Canada)
Liquid crystals for life sciences; from host media to optoelectronics devices
- 3) **Tigran Shahbazyan** (Jackson State University, USA)
Photoluminescence of metal nanostructures
- 4) **Roman Sobolewski** (University of Rochester, USA)
Terahertz Photonics

Invited Talks

- 1) **Marina Aghayan** (*A.B. Nalbandyan Institute of Chemical Physics of NAS, Armenia; Tallinn University of Technology, Tallinn, Estonia; FACT Industries OÜ, Tallinn, Estonia*)
Optics and 3D printing
- 2) **Arsen Babajanyan** (*Yerevan State University, Armenia*), A. Movsisyan, H. Manukyan, G. Manukyan, N. Nazaryan, K. Lee
Advanced Near-Field Visualization of Electromagnetic Distributions in RF Anisotropic Nanostructures Using Thermo-Elastic Optical Microscopy
- 3) **David Blaschke** (*University of Wroclaw, Poland; HZDR-CASUS, Germany*)
Particle production in strong, time-dependent fields
- 4) **Tobias Dornheim** (*HZDR-CASUS, Germany*)
Towards highly accurate diagnostics of extreme states of matter with x-ray Thomson scattering
- 5) **Davit Ghazaryan** (*Yerevan State University, Armenia*)
Anisotropic optical properties and emergent phenomena in van der Waals crystals
- 6) **David Hayrapetyan** (*A.B. Nalbandyan Institute of Chemical Physics of NAS, Armenia*)
Mollow triplet in Two-Impurity dumbbell quantum dot
- 7) **Paytsar Mantashyan** (*A.B. Nalbandyan Institute of Chemical Physics of NAS, Armenia*), Y. Bleyan, T. Sargsian, A. Kostanyan, D. Hayrapetyan
Impact of Bessel laser beam on excitonic complexes in quantum dot

8) **Aram Papoyan** (*Institute for Physical Research of NAS, Armenia*), S. Shmavonyan, A. Khanbekyan, M. Movsisyan

Scanning technique for optical transmission imaging of strongly-scattering objects with ballistic photons

9) **Armen Sargsyan** (*Institute for Physical Research of NAS, Armenia*), R. Momier, C. Leroy, D. Sarkisyan

Influence of buffer gas pressure on the formation of subnatural N-resonances formed in rubidium atomic vapors

10) **Hayk Sarkisyan** (*Institute of Applied Problems of Physics of NAS, Armenia*), D. Baghdasaryan, V. Harutyunyan

Exciton states and electroabsorption in CdSe nanoplatelets

11) **Konstantin Sokolov** (*The UT M.D. Anderson Cancer Center, USA*), D. Nevozhay, C. Dyll, M. Hatami, P. Tsitovich, M. Singh, R. Bouchard, K. Larin

Phase-change nanodroplets for biomedical imaging

Contributed Talks

1) **Zhirayr Adamyan** (*Yerevan State University, Armenia; CANDLE, Synchrotron Research Institute, Armenia*), V. Ohanyan, A. Chobanyan

Enhancement and manipulation of quantum entanglement in three-spin clusters by non-conserving magnetization and electric field

2) **Eduard Aleksanyan** (*A.I. Alikhanyan National Science Laboratory, Armenia*), K. Manukyan, V. Harutyunyan, N. Margaryan, A. Badalyan, A. Arestakyan, N. Grigoryan, A. Papikyan, H. Yeritsyan

Luminescence Enhancement of All-Inorganic Lead Halide Perovskites Thin Films under Proton Irradiation

3) **Lusine Aloyan** (*Yerevan State University, Armenia; A.I. Alikhanyan National Science Laboratory, Armenia*), A. Avetisyan

Investigation of irradiated DNA/porphyrin complexes by optical methods

4) **Karen Aramyan** (*Institute of Applied Problems of Physics of NAS, Armenia*)

Integrable model of a two-dimensional singular spherical oscillator in a constant magnetic field

5) **Arevik Asatryan** (*A.B. Nalbandyan Institute of Chemical Physics of NAS, Armenia*), N. Petrosyan, G. Kolotyan, S. Grigoryan, Ts. Mkhitarian, H. Khachatryan

Hybrid organic-inorganic perovskite thin films for solar cell applications

6) **Anush Badalyan** (*A.I. Alikhanyan National Science Laboratory, Armenia; Institute of Applied Problems of Physics of NAS, Armenia*), V.V. Harutyunyan, E.M. Aleksanyan, N.E. Grigoryan, A.G. Arestakyan

Proton Beam Irradiation of Pure and Cerium-Doped Zinc Orthosilicate

7) **Hovhannes Badalyan** (*A.I. Alikhanyan National Science Laboratory, Armenia*), T. Ohanyan, E. Aleksanyan, N. Margaryan

Probing The Effect of 15.5 MeV Proton beam on The Optical and Structural Properties of Graphene Layers

8) **Darina Darmoroz** (*Yerevan State University, Armenia*), S. Shvetsov, T. Orlova, M. Rafayelyan

Generation of localized orientational structures induced by Gaussian and vortex beams in chiral nematic liquid crystal

9) **Hermine Gharagulyan** (*A.B. Nalbandyan Institute of Chemical Physics of NAS, Armenia; Yerevan State University, Armenia*), A. Vasil'ev, M. Zhezhu, G. Baghdasaryan, Y. Melikyan

Functionalized Graphene Oxide Liquid Crystalline Systems Under External Fields

10) **Nelli Gharibyan** (*Institute of Applied Problems of Physics of NAS, Armenia*), R. Sukiasyan, A. Danghyan, A. Ayvazyan, R. Apreyan, A. Atanesyan

The crystals of L-arginine sulfosalicylates and L-nitroarginine sulfosalicylate

11) **Levon Grigoryan** (*Institute of Applied Problems of Physics of NAS, Armenia*), A.H. Mkrtchyan, S.B. Dabagov, A.A. Saharian, A.R. Mnatsakanyan, H.P. Harutyunyan, G.V. Margaryan, H.F. Khachatryan

Radiation from a charged particle rotating around a ball of a dispersive matter

12) **Njteh Kourian** (*Yerevan State University, Armenia*), T.M. Sarukhanyan, M. Rafayelyan, K. Vanmol, H. Ottevere, T. Baghdasaryan

Two-Photon Polymerization 3D Printing of Optical Waveguide Tapers Designed and Optimized with EPSO Algorithm

13) **Astghik Kuzanyan** (*Institute for Physical Research of NAS, Armenia*), Ar. Kuzanyan, V. Nikoghosyan, L. Mheryan

Determination of the signal power arising from the detection of single photons of different energies by a thermoelectric sensor with different operating temperature

14) **Biplab Mahato** (*University of Wroclaw, Poland*), D. Blaschke

Kinetic equation approach to pair production in Graphene

15) **Manvel Manvelyan** (*Institute of Applied Problems of Physics of NAS, Armenia*), M. Mkrtchyan, H. Sarkisyan

Influence of Temperature on Intraband Transitions in CdSe Nanoplatelets

16) **Narek Margaryan** (*A.I. Alikhanyan National Science Laboratory, Armenia*), H. Badalyan, T. Ohanyan, E. Aleksanyan, A. Hovhannisyan, A. Harutyunyan

A New Approach to Chlorination and Dechlorination of Graphene Layers

17) **Nikita Marinin** (*Yerevan State University, Armenia*), M. Rafayelyan

Optical Reservoir Computing With Additional Degree of Freedom

18) **Hayk Mikayelyan** (*Yerevan State University, Armenia*), A. Sargsyan, A. Tigranyan, M. Rafayelyan

Engineering arbitrary transmission matrix of the optical system with scattering medium based on spatial light modulation

19) **Aram Nahapetyan** (*Institute of Applied Problems of Physics of NAS, Armenia*), M. Mkrtchyan, Y. Mamasakhlisov, H. Sarkisyan

Few-particle Intraband Transitions in the Asymmetric Ellipsoidal Quantum Dot

20) **Filip Optolowicz** (*University of Wroclaw, Poland; HZDR-CASUS, Germany*), R. Pausch, D. Blaschke, M. Bussmann

QED-Based Synchrotron Extension for PIconGPU to Optimize Laser Wakefield Accelerators as X-Ray Sources

21) **Levan Pantsulaia** (*Ilia State University, Georgia*), T. Beirishvili

General Overview in X-ray Technologies for Cancer Cell Detection and Treatment

22) **Henrik Parsamyan** (*Yerevan State University, Armenia*), R. Gabrielyan, G. Arabajyan, T. Yezeqyan

Engineering Electromagnetic Hotspots in Gap-Surface Plasmon Resonators

23) **Spyros Rizos** (*National Technical University of Athens, Greece*), Y. Kominis

Non-Hermitian control of Hermitian waveguide arrays

24) **Evgeny Ryabkov** (*Moscow Institute of Physics and Technology, Russia*), D.G. Baranov

Exciton-polaritons in Mie voids

25) **Aram Saharian** (*Institute of Applied Problems of Physics of NAS, Armenia*)

Generation of surface polaritons on cylindrical interfaces

26) **Arshak Vartanian** (*Yerevan State University, Armenia*)

Optical phonon self-energy in graphene with spin-orbit coupling

27) **Simon Zhamkochyan** (*A.I. Alikhanyan National Science Laboratory, Armenia*), V. Kakoyan, A. Aprahamian, S. Abrahamyan, A. Ghalumyan, H. Elbakyan, A. Kakoyan, H. Rostomyan, A. Safaryan, G. Sughyan, J. Annand, K. Livingston, R. Montgomery, P. Achenbach, J. Pochodzalla, D.L. Balabanski, S.N. Nakamura, V. Sharyy, D. Yvon, K. Manukyan, A. Margaryan

Time Resolved Photoemission Spectrometer

Posters

1) **Gayane Ananyan** (*Yerevan State University, Armenia*), Y. Dalyan, R. Ghazaryan, N. Karapetyan

UV-Visible Spectroscopy and Circular Dichroism methods in the Study of DNA-Porphyrin Complexes

2) **Ariga Arakelyan** (*Institute for Physical Research of NAS, Armenia*), R. Hovsepyan, A. Poghosyan, Y. Kafadaryan, T. Vartanyan, N. Aghamayan, V. Lazaryan, H. Mnatsakanyan

Electrical Properties of Doped Zinc Oxide Films and Memory Cell on their Basis

3) **Ani Avetisyan** (*Yerevan State University, Armenia*), L. Mkrtchyan, L. Aloyan

The investigation of irradiation effect on DNA/cisplatin complexes in presence of AgTOEPyP4 Porphyrin by absorption spectroscopy method

4) **Anush Badalyan** (*A.I. Alikhanyan National Science Laboratory, Armenia; Institute of Applied Problems of Physics of NAS, Armenia*), V.V. Harutyunyan, E.M. Aleksanyan, N.E. Grigoryan, A.G. Arestakyan, N. Margaryan, A. Manukyan, L. Matevosyan, A. Kirakosyan, K. Manukyan

Proton Irradiation Tolerance of on CsPbBr₃ Perovskites Thin Films

5) **Milena Badalyan** (*Yerevan State University, Armenia*), T. Jomardyan, I. Vardanyan, Y. Dalyan

Spectral Analysis of Structural Transitions in G-Quadruplex and i-Motif DNA Structures in the Presence of Urea

6) **Irina Baghdasaryan** (*Institute of Applied Problems of Physics of NAS, Armenia*)

The aesthetic aspect of glass application in optics

7) **Andrijana Bilić** (*University of Novi Sad, Serbia; AIDASCO, Serbia*), D. Krunić, S.J. Armaković, S. Pelemiš, S. Armaković

Computational Insights into UV Spectrophotometric Behavior of PMMA in the Presence of Pharmaceutical Pollutants through Atomistic Calculations

8) **Yehor Bulhakov** (*Kharkiv National University of Radio Electronic, Ukraine*), O. Hnatenko, O. Levchenko

Photonic crystal cell nanolaser as an optical frequency standard

9) **Vladyslav Chaplyhin** (*Kharkiv National University of Radio Electronic, Ukraine*), O. Hnatenko, O. Levchenko

Enhancing Information Transmission Methods Using Femtosecond Radiation

10) **Astghik Danghyan** (*Institute of Applied Problems of Physics of NAS, Armenia*), R.P. Sukiasyan, N.S. Gharibyan, R.A. Apreyan and A.K. Atanesyan

α -LiIO₃ Single Crystals Doped with some Amino Acids

11) **Roza Gabrielyan** (*Yerevan State University, Armenia*), T. Yezekyan, S.I. Bozhevolnyi

Quasi-bound states in the continuum in finite asymmetric waveguide gratings

12) **Hayk Gevorgyan** (*A.I. Alikhanyan National Science Laboratory, Armenia; St. Kliment Ohridski University, Bulgaria*)

Ultrabroadband, ultranarrowband and ultrapassband composite polarisation half-wave plates, ultrabroadband composite polarisation pi-rotators and on the quantum-classical analogy

13) **Sona Grigoryan** (*A.B. Nalbandyan Institute of Chemical Physics of NAS, Armenia*), M. Ghevondyan, H. Khachatryan, A. Asatryan

Solar Cell thin films from hybrid perovskite nanocrystals

14) **Sara Gyozyan** (*A.B. Nalbandyan Institute of Chemical Physics of NAS, Armenia*), Y. Melikyan, M. Zhezhu, A. Vasil'ev, H. Gharagulyan

Synthesis, Characterization and Liquid Crystalline Phase Formation of MoS₂

15) **Serhii Herasymov** (*Kharkiv National University of Radio Electronic, Ukraine*), O. Levchenko, O. Hnatenko

Tamm Plasmon Resonance for a Nanolaser Configuration

16) **Oleksandr Hnatenko** (*Kharkiv National University of Radio Electronic, Ukraine*), O. Levchenko, I. Morhun

New generation fiber optic gyroscopes

17) **Artem Hnibeda** (*Kharkiv National University of Radio Electronic, Ukraine*), Y. Kurskyi, O. Hnatenko, O. Levchenko

Enhancement of Optical Methods and Systems for Object Sensing in Space

18) **Levon Hovakimian** (*Institute of Radiophysics and Electronics of NAS RA, Armenia*)

On the theory of the Lorenz-Mie phase shifts

19) **Yevgenia Kafadaryan** (*Institute for Physical Research of NAS, Armenia*), N. Aghamalyan, A. Sarkisian, M. Nersisyan, R. Hovsepyan, A. Poghosyan, S. Petrosyan, G. Badalyan, H. Gyulasaryan

Optical Properties of Ag-Doped ZnO Films

20) **Nelli Karapetyan** (*Yerevan State University, Armenia*), R. Ghazaryan, V. Barkhudaryan, G. Ananyan

Effect of ZnO Nanoparticles on DNA Stability under UV-Irradiation

21) **Oleksandr Koluzanov** (*Kharkiv National University of Radio Electronic, Ukraine*), Y. Kurskoy, O. Levchenko

Hyperspectral imaging with Fourier transform

22) **Serhii Kukhtin** (*Kharkiv National University of Radio Electronic, Ukraine*), O. Hnatenko

Temperature measurements using Bragg sensor

23) **Artur Margaryan** (*Institute of Applied Problems of Physics of NAS, Armenia*), A.S. Abrahamyan, A.G. Mkrtychyan, R.Yu.Chilingaryan

Features of the operation of an acoustoplasma magnetron

24) **Astghik Margaryan** (*Institute of Applied Problems of Physics of NAS, Armenia*), A. Soghomonyan, H. Eritsyanyan, A. Lalayan, V. Mirzoyan, R. Soghomonyan

Fraunhofer diffraction on a slit when light passes from a material medium into a vacuum

25) **Hrayr Margaryan** (*Institute of Applied Problems of Physics of NAS, Armenia*), H.R. Drmehyan, S.A. Mkhiraryan

Study of the influence of the stress-strain state of the interferometer block on its X-ray topographic pattern

26) **Lusine Mheryan** (*Institute for Physical Research of NAS, Armenia*), A.A. Kuzanyan, A.S. Kuzanyan, V.R. Nikoghosyan

Modeling and simulation of the heat propagation processes occurring in a nanoscale thermoelectric sensor of a single-photon detector.

27) **Filip Optolowicz** (*University of Wroclaw, Poland; HZDR-CASUS, Germany*), R. Pausch, D. Blaschke, M. Bussmann

Synchrotron radiation extension for PIconGPU

28) **Taras Oseredchuk** (*Kharkiv National University of Radio Electronic, Ukraine*)

Pattern Recognition Model Based on Topological Analysis

29) **Reza Saremimoghaddam** (*Institute for Advanced Studies in Basic Sciences, Iran*), E. Ahadi Akhlaghi

Design, development and optimization of a homemade non-contact photolithography system

30) **Romik Sargsyan** (*Russian-Armenian University, Armenia*), R. Sahakyan, E. Pogosyan, E. Gazazyan, A. Darbinyan

Machine Learning-Based Optimization of Programmable Quantum All Logic Elements

31) **Yevhen Sulima** (*Kharkiv National University of Radio Electronic, Ukraine*), S. Yukhno, O. Levchenko

Dispersion Properties of Magneto-Photonic Crystals

32) **Viktor Zaiarnyi** (*Kharkiv National University of Radio Electronic, Ukraine*), O. Hnatenko, O. Levchenko

Photonic crystal nanosensors

33) **Marina Zhezhu** (*A.B. Nalbandyan Institute of Chemical Physics of NAS, Armenia*), A. Vasil'ev, M. Yaprntsev

Raman Spectroscopy Investigation of Phase Change Material $\text{Ge}_2\text{Sb}_2\text{Te}_5$

Student Chapters Posters

- 1) IPR Armenia OPTICA Student Chapter
- 2) RAU RADIANT MINDS:
 - a) RAU OPTICA Student Chapter
 - b) RAU and NAS SPIE Student Chapter
 - c) RAU EPS Young Minds
- 3) YSO:
 - a) Yerevan State University OPTICA Student Chapter
 - b) Yerevan State University SPIE Student Chapter