Tuesday: October 9

09:30 – 10:00
12:30 – 14:00
Registration of the participants

Morning Session	Chairs: R. Kostanyan, B. Kryzhanovsky
10:00	**Conference Opening: Welcome Talks** *Aram Papoyan, Director of IPR NAS* *Invited officials*
10:30	**Nonlinear magneto-optical effects with cold rubidium atoms** We present results of our latest experiments on magneto-optical effects in laser-cooled non-degenerate rubidium samples. Long coherence lifetimes enable us to observe narrow magneto-optical resonances suitable for precision magnetometry. *Adam Wojciechowski, Krystian Sycz, Jerzy Zachorowski, Wojciech Gawlik* Jagiellonian University, Poland
11:00	**N-resonance formation in micrometric-thin cells filled with Rb and buffer gas: splitting in strong magnetic field** N-resonance excited in Rb vapor with neon gas addition confined in micrometric-thin cells is studied. Good contrast and narrow line-width are obtained for the 30 μm- thickness. The results of N-resonance splitting in strong magnetic field are presented. *D. Sarkisyan[1], A. Sargsyan[1], R. Mirzoyan[1,2], A.Papoyan[1]* [1]Institute for Physical Research, Armenia [2]Laboratoire Interdisciplinaire Carnot de Bourgogne, Université de Bourgogne, France
11:30	**Advantage of photoluminescence spectroscopy for characterization of different low-dimensional semiconductor materials** The objective of presented article is to give an overview of photoluminescence spectroscopy as a characterization tool in the study of different low-dimensional semiconductor structures, i.e. atomically-thin layered crystals, quantum wells, and nanorods. *D. Dumcenco[1], H. P. Hsu[2], Y. P. Wang[1], C. H. Ho[3], K. K. Tiong[4], Y. S. Huang[1]* [1]Department of Electronic Engineering, National Taiwan University of Science and Technology, Taiwan [2]Ming Chi University of Technology, Taiwan [3]Graduate Institute of Applied Science and Technology, National Taiwan University of Science and Technology, Taiwan [4]National Taiwan Ocean University, Taiwan

12:00 – 13:30 Lunch & Coffee Break

Afternoon Session	Chairs: D. Sarkisyan, C. Leroy
13:30	**Effect of the electric field on optical parameters of a metal–dielectric–metal nanostructure** We describe the results of studies of optical parameters for a waveguide silver–corundum–silver nanostructure. The variation (by a factor of three to five) of the reflection coefficient of the structure, which was dependent on the applied voltage in the range of 0-30 V is observed. The possible mechanisms of the revealed effect are discussed. *B.V. Kryzhanovsky[1], A.O. Melikyan[2], A.N. Palagushkin[1], S.A. Prokopenko[1], A.P. Sergeev[1]* [1]Scientific Research Institute of System Development of the Russian Academy of Sciences, Russia [2]Russian-Armenian (Slavonic) State University, Armenia
14:00	**Hyperfine Paschen-Back regime realized in Rb an Cs nanocells** A simple and efficient scheme based on one-dimensional nano-cell filled with Rb and/or Cs and strong permanent ring magnet use allowed the observation of hyperfine Paschen-Back regime in external magnetic field of 5000–7000 G. *A. Sargsyan[1], G. Hakhumyan[1 2], C. Leroy[2], Y. Pashayan-Leroy[2], A. Papoyan[1], D. Sarkisyan[1]* [1]Institute for Physical Research, Armenia [2]Laboratoire Interdisciplinaire Carnot de Bourgogne, Université de Bourgogne, France
14:30–15:00	**Defect mode engineering in 1D photonic crystal to design spatial filter** A defect layer with transversely-varying indices is introduced in a 1D photonic crystal to design special filter. Such a layer causes to appear different transmission modes in band gap which is dependent on transverse direction. *Kazem Jamshidi-Ghaleh, Farzaneh Bayat, Fatemeh Moslemi and Zahra Ebrahimi Hamed* Azarbaijan Shahid Madani University, Tabriz, Iran
	**16:00 Bus to the hotels**

Wednesday: October 10

Morning Session — Chairs: Yu. Malakyan, R. Akhmedzhanov

10:00	**Probing electron structure and electron correlation by electron impact (e,2e) and (e,3e) ionization of atomic and molecular targets** (e,2e) and (e,3e) experiments designate complete experiments, where the ejected electrons are detected in coincidence with the scattered electron. Our aim is to calculate the multiply differential cross section of these processes by perturbative methods. *Boghos Bedros Joulakian* University of Lorraine, France
10:30	**Splitting of the EIT-resonance in a strong magnetic field using a micrometric-thin cells filled with Rb and buffer gas** Electromagnetically-Induced Transparency (EIT) process in Rb vapor with neon gas addition confined in micrometric-thin cells is studied. The results of EIT -resonance splitting into 5 components in strong longitudinal magnetic field up to 2000 Gauss are presented. *R. Mirzoyan[1,2], A. Sargsyan[1], C. Leroy[2], Y. Pashayan-Leroy[2], D. Sarkisyan[1]* [1]Institute for Physical Research, Armenia [2]Laboratoire Interdisciplinaire Carnot de Bourgogne, Université de Bourgogne, France
11:00	**Photoluminescence properties of Cu_2O nanostructured thin films** The photoluminescence bands at 1.35eV, 1.69eV and 1.88eV well below the band-gap of nanocrystalline Cu_2O were observed under CW laser excitation, at room temperature. We discuss the origin of this room temperature photoluminescence. *Anna Reymers[1], Vladimir Gevorgyan[1], Suzanne Giorgio[2], Artak Karapetyan[2,3], Wladimir Marine[2]* [1]Russian-Armenian (Slavonic) University, Armenia [2]Aix Marseille Université, CNRS, France [3]Institute for Physical Research, Armenia
11:30	**The influence of retardation and radiation damping on the spectrum of surface plasmons in metallic nanoparticles** We propose an approach for the calculation of radiation damping effects in surface plasmon spectra in spherical and spheroidal nanoparticles, core-shell particles, coupled nanospheres and sphere near interface. *K. Madoyan[1], A. Melikyan[1], H. Minasyan[2]* [1]Russian-Armenian (Slavonic) University, Armenia [2]A. I. Alikhanyan National Science Laboratory, Armenia

12:00 – 13:30 Lunch & Coffee Break

Afternoon Session	Chairs: G. Grigoryan, A. Ishkhanyan
13:30	**Ultrashort pulse amplification in the induced optical anisotropic medium** The coherent response accumulation method is used to assess the ability to amplify the polarization rotated component of a probe beam about two-photon resonance conditions *Mariam H. Hovhannisyan, Atom Zh. Muradyan* Yerevan State University, Armenia
14:00	**Ultrabroadband biphotons in chirped photonic crystals** Generation of biphoton wave-packets with ultrabroadband spectra are proposed for linearly chirped quasi-phase-matching configurations involving nonlinear photonic crystals. *A.R. Tamazyan[1,2], G.Yu. Kryuchkyan[1,2]* [1]Institute for Physical Research, Armenia [2]Yerevan State University, Armenia
14:30–15:00	**Web portal using grid in areas of photonics and quantum information** A Web Portal in areas of photonics and quantum information is introduced by using computational Grid infrastructures. The applications for quantum engineering are illustrated. *Hrachya Astsatryan[1], Tigran Gevorgyan[2], Anna Shahinyan[3], Gagik Kryuchkyan[2,3]* [1]Institute for Informatics and Automation Problems, Armenia [2]Institute for Physical Research, Armenia [3]Yerevan State University, Armenia
	**16:00 Bus to the hotels**

Thursday: October 11

10:00 – 13:30
POSTER SESSION
For the list of posters please refer to pp. 8–14.

13:30 – 14:30 Lunch & Coffee Break

14:30 → Sightseeing Tour

Friday: October 12

Morning Session — Chairs: A. Petrosyan, A. Wojciechowski

10:00	**High momentum splitting of matter-waves by an atom chip field gradient beam splitter** The splitting of matter-waves into a superposition of spatially separated states is a fundamental tool for studying the basic tenets of quantum mechanics and other theories, as well as a building block for numerous technological applications. We report the realization of a matter-wave beam splitter based on magnetic field gradients on an atom chip, which can be used for freely propagating or trapped atoms in a Bose-Einstein condensate or a thermal state. The beam splitter incorporates several fundamental quantum processes such as Rabi Oscillations, Ramsey fringes, and Stern-Gerlach interactions. *Shimon Machluf, Yonathan Japha, Ron Folman* Ben-Gurion University, Israel
10:30	**Experimental demonstration of qubit-qubit interaction and effective regime of EIT in Pr^{3+}:LaF_3 crystal** Institute of Applied Physics of the Russian Academy of Sciences, Russia The effective regime of EIT based on spectral selection is realized experimentally in the Pr^{3+}:LaF_3 crystal. The possibility of implementing qubits on ensembles of spectrally selected particles and the main operations with them is demonstrated. *R.A. Akhmedzhanov, A.A. Bondartsev, L.A. Gushchin, A.G. Litvak, I.V. Zelensky* Institute of Applied Physics of the Russian Academy of Sciences, Russia
11:00	**Photon echoes from atomic frequency comb in Pr^{3+}:LaF_3 crystal** The results of experimental study of atomic frequency comb based quantum optical memory in Pr^{3+}:LaF_3 crystal are presented. The novel technique for control the memory storage time by external electric field is proposed and experimentally investigated. *R.A. Akhmedzhanov, A.A. Bondartsev, L.A. Gushchin, A.G. Litvak, I.V. Zelensky* Institute of Applied Physics of the Russian Academy of Sciences, Russia
11:30	**GHz photon detector** Principles of a new photon detector, based on the 1 GHz radio frequency photomultiplier tube are proposed. *A. Margaryan[1], R. Ajvazyan[1], S. Zhamkochyan[1], J. Annand[2]* [1]A. I. Alikhanyan National Science Laboratory, Armenia [2]University of Glasgow, Scotland, UK

12:00 – 13:30 Lunch & Coffee Break

Afternoon Session	Chairs: A. Melikyan, R. Folman
13:30	**Formation of a single-photon 0π pulse within a hollow fiber** We investigate the reshaping of a single-photon pulse to 0π pulse due to its passage through cold Λ-type atoms inside a hollow core of single-mode photonic-crystal fiber. The temporal entanglement of outgoing photon is found. *Sh. Petrosyan[1], Yu. Malakyan[1,2]* [1]Institute for Physical Research, Armenia [2]Yerevan State University, Armenia
14:00	**All-optical four-bit Toffoli gate with possible implementation in solids** We examine in detail the cyclic adiabatic population transfer methods for five-level diagrams in order to construct a four-bit universal reversible logic gate. We show that under certain conditions and sequence of turning on and off the laser pulses a five-level system may be reduced to an effective Λ-diagram. *G. Grigoryan, V. Chaltykyan, E. Gazazyan* Institute for Physical Research, Armenia
14:30	**Long-range coupling of single atoms mediated by metallic nano-wires and metamaterials** We show ways to entangle single atoms and build deterministic phase gates by creating long-range, material-mediated interaction between the atoms. As interaction mediators, we use metallic nanowires and negative refractive index materials. *David Dzsotjan, Michael Fleischhauer* [1]Wigner RCP of the Hungarian Academy of Sciences, Budapest, Hungary [2]TU Kaiserslautern, Kaiserslautern, Germany
15:00	**Generalized Rosen-Zener two-state term-crossing model** The two-state problem for a rich family of amplitude- and phase-modulated pulses involving both non-crossing and term-crossing models with one or two crossings is analyzed. The model includes the original constant-detuning Rosen-Zener model as a particular case. *A.M. Ishkhanyan* Institute for Physical Research, Armenia
15:30	**Conference closing**
	**16:30 Bus to the hotels**

Poster Presentations

1	**Microstructure and elemental composition of the CuO/Ag ceramics before and after laser irradiation** The influence of the third harmonic of YAG:Nd^{3+} laser on the microstructure and elemental composition of CuO and CuO/Ag ceramic samples heat-treated under different conditions is studied. *V.A. Kuzanyan, S.T. Pashayan, A.S. Kuzanyan* Institute for Physical Research, Armenia
2	**Opportunity to maximize the utilization of the target material in the method of pulsed laser deposition** A method of creating a laser spot of a specific configuration on the target, allowing almost a full utilization of the target material, is proposed. *A.A. Kuzanyan, V.A. Petrosyan, A.S. Kuzanyan* Institute for Physical Research, Armenia
3	**Influence of synthesis conditions and laser radiation on electroconductivity of CuO/Ag ceramics** The results of influence of various heat treatments and laser pulse radiation (20 ns) on CuO and CuO/Ag samples temperature dependence of the resistivity and the activation energy of the resistance are presented. *S. Pashayan, V. Tatoyan, A. Kuzanyan* Institute for Physical Research, Armenia
4	**Detection of glucose high-concentration induced changes on morphology of red blood cell membrane using optical trapping and digital holography** We investigate morphological changes of Red Blood Cell membrane that are induced by high glucose level in buffer by using the combination of the optical trapping and Digital Holographic Microscopy techniques *Abdorahim Tavakoli[1], Ali-Reza Moradi[1,2]* [1]University of Zanjan, Iran [2]Optics Research Center, Institute for Advanced Studies in Basic Sciences, Zanjan, Iran
5	**The dark current-voltage characteristics of BST/SiO_2/Si heterostructures prepared by pulsed laser deposition** Investigated the current-voltage characteristics and optical properties of the heterostructure BST/SiO_2/Si, obtained by pulsed laser deposition. Founded that the direct branch of the characteristic is determined by the power law. *Harutyun Dashtoyan* State Engineering University of Armenia

6	**Investigation of non-reciprocal transmission of light through cholrsteric liquid crystal single layer** We observe diode-like action of single CLC layer with 20μm thickness. The sample shows Non-Reciprocity of transmission for light with Circular polarization. LCP Light transmits through the sample without loses, while RCP light has low transmission. Unpolarized light transmission from described side is the same as transmission from the other side of the sample for RCP, LCP and Unpolarized Light. *S.I. Hovhannisyan, T.K. Dadalyan, R.B. Alaverdyan, A.S. Karapetyan* Yerevan State University, Armenia
7	**Investigation of spectral characteristics of CLC layer disturbed by periodic mechanical oscillations** We measure transmission, reflection and luminescence spectra of CLC and dye doped CLC, which is disturbed by mechanical vibrations. Measurements are carried out at various conditions for finding a method of tunability of spectral characteristics. *A. Khachatryan, T.K. Dadalyan, R.B. Alaverdyan* Yerevan State University, Armenia
8	**Investigation of the second reflection band appearing in the CLC single layer reflection spectrum** We observe two reflection bands in the CLC single layer reflection spectrum shifted ~180 nm respect to each other. Both bands show temperature and electromagnetic tunability. We investigate this phenomenon for its possible practical applications. *T.K. Dadalyan, R.B. Alaverdyan, T.S. Hovhannisyan, S.I. Hovhannsiyan, A.S. Karapetyan* Yerevan State University, Armenia
9	**Direct interband light absorption in the ensemble of cylindrical quantum dots with modified Pöschel-Teller potential** Analytical expressions for the particle energy spectrum, absorption coefficient and dependencies of effective threshold frequencies of absorption on the geometrical sizes of quantum dot are considered for the regime of strong size quantization. *D.B. Hayrapetyan[1,2], E.M. Kazaryan[1], H.Kh. Tevosyan[1]* [1]Russian-Armenian (Slavonic) State University, Armenia [2]State Engineering University of Armenia, Armenia
10	**Fabrication and analysis of the $Cu(In_xGa_{1-x})Se_2$, $Cu(In_xGa_{1-x})S_2$ and $CuIn(S_xSe_{1-x})_2$ nanocrystals** We synthesized various quaternary $Cu(In_xGa_{1-x})Se_2$, $Cu(In_xGa_{1-x})S_2$ and $CuIn(S_xSe_{1-x})_2$ ($0 \le x \le 1$) chalcopyrite nanoparticles in oleylamine and tetraethylene glycol by polyol route using copper, indium, gallium salts, S and Se powder for solar cell materials. *Hadi Zarei[1], Rasoul Malekfar[1], Hossein Movla[2]* [1]Tarbiat Modares University, Iran [2]University of Tabriz, Tabriz, Iran

11	**Thin film field effect transistor based on ferroelectric–semiconductor heterostructure** We report the investigation of heterostructures based on ferroelectric crystal and semiconductor film: $LiNbO_3$–ZnO:Li and TGS–ZnO:Li. Based on ferroelectric - field effect transistor heterostructure a new type of pyroelectric IR photodetector with high sensitivity and detectability has been developed. *A.R. Poghosyan, N.R.Aghamalyan, T.A. Aslanyan, E.S. Vardanyan, E.A. Kafadaryan, R.K.Hovsepyan, S.I.Petrosyan* Institute for Physical Research, Armenia
12	**Metal–insulator electronic phase transitions in wide gap ZnO semiconductors** Metal–insulator electronic phase transitions in wide gap ZnO semiconductors have been studied. The peculiarities of this transition in ZnO films doped by donor or acceptor impurity and the influence of mentioned defect complex on the charge carrier transfer mechanism were investigated. *R.K. Hovsepyan, N.R. Aghamalyan, T.A. Aslanyan, E.S.Vardanyan, Y.A. Kafadaryan,, S.I. Petrosyan, A.R. Poghosyan* Institute for Physical Research, Armenia
13	**Structural and electrical properties of thin lanthanum oxide films grown by annealing of lanthanum hexaboride in oxygen** In this study, the lanthanum oxide thin films have been grown by annealing of the lanthanum hexaboride (LaB_6) films at high temperatures (400–700°C) in oxygen environment. The optimum grown parameters are developed, and the I-V and C-V characteristics also are investigated. *N. Aghamalyan, G. Badalyan, A. Eganyan, I. Gambaryan, R. Hovsepyan, A. Igityan, V. Lazaryan, Y. Kafadaryan, S. Petrosyan, A. Kuzanyan* Institute for Physical Research, Armenia
14	**Measurement of reflectivity of bonded interface in microchip laser cavity using scanning interferometry** A method of determination of reflectivity of interface between two optically bonded parallel plates is presented. This system is treated as a 3-mirror scanning Fabry-Perot interferometer. Analysis of its temperature response gives reflectivity of interface. *M. Kerobyan[1,2], A. Gyulasaryan[2], S. Soghomonyan[2]* [1]Institute for Physical Research, Armenia [2]Spectralus CJSC, Armenia
15	**Dimensional distribution of green up-conversion emission in $PbMoO_4:Er^{3+}$ crystals: effect of excitation displacement** Analysis of the dimensional distribution of up-conversion green luminescence is carried out for $PbMoO_4$-Er^{3+} crystals. *N. R. Aghamalyan[1], G. G. Demirkhanyan[1,2], R. K. Hovsepyan[1], R. B. Kostanyan[1], D. G. Zargaryan[1]* [1]Institute for Physical Research, Armenia [2]Armenian State Pedagogical University, Armenia

16	**Investigation of output power of copper vapor laser (CVL) using copper coating mirror and measuring the temperature profile using LIBS method** We investigated copper vapor laser's output performance for different coating of cavity mirrors. Laser-induced breakdown spectroscopy (LIBS) method has been used for this study. *Mitra Namnabat[2], Saeid Behrooziniya[1], Maryam Gheshlaghy[1], Kamran Khorasany[1], Ali-Reza Moradi[2]* [1]Laser and optics Research Institute, Tehran, Iran [2]University of Zanjan, Iran
17	**Внутризонные переходы в пленке InSb в присутствии электростатического поля** Рассмотрены переходы из подзоны тяжелых и легких дырок. Приведены графики зависимости переходов от напряженности внешнего поля. *В.А. Гаспарян* Российско-Армянский (Славянский) Университет, Армения
18	**Synthesis of ZnO nanoparticle by precipitation method** In this research, ZnO nanoparticles were produced with precipitation method by using different concentration of zinc acetate in ethanol/methanol as organic solvents. The average sizes of nanoparticle products were between 22–55 nanometer. *Marzieh Nadafan[1], Ali Izadi Darbandi[2], Rasoul Malekfar[1], Zahra Dehghani[1]* [1]Tarbiat Modares University, Iran [2]University of Tehran, Iran
19	**Synthesizeation of amorphous cordierite glass-ceramic powders** In this research we prepared amorphic $2Mg.2Al_2O_3.5SiO_2$ glass-ceramic nano powder with three various methods; Pechini, solution combustion synthesis with flame and without flame. *Marzieh Nadafan[1], Rasoul Malekfar[1], Ali Izadi Darbandi[2], Zahra Dehghani[1], Hadi Zarei[1]* [1]Tarbiat Modares University, Iran [2]University of Tehran, Iran
20	**Specific features of electronic states in a cylindrical surface of finite thickness with vertical potential of confinement** A new model of confinement potential for cylindrical nanolayer is introduced. Given that layer's thickness is much smaller than radius of cylinder, the single electron wave functions and energy spectrum are defined in adiabatic approximation.*S.L. Harutyunyan[1], H.G. Demirtshyan[2]* [1]State Engineering University of Armenia, Armenia [2]Gyumri State Pedagogical Institute, Armenia

21	**Growth and studies of mixed $(Lu,Y)_3Al_5O_{12}$:Ce scintillator crystals** $(Lu_{1-x}Y_x)_3Al_5O_{12}$:Ce solid solutions ($0 \le x \le 1$) were grown and characterized in terms of actual Ce and Y concentrations. Spectral line shifts (f-d transitions of Ce^{3+}) with crystal composition were registered. Scintillation parameters of solid solution crystals ($x = 0.2$) were compared with those of LuAG:Ce. *K.L. Ovanesyan[1], G.R. Badalyan[1], A. Yeganyan[1], A.G. Petrosyan[1], A. Belsky[2], C. Dujardin[2], E. Auffray[3], P. Lecoq[3], K. Pauwells[3], N. Di Vara[3]* [1]Institute for Physical Research, Armenia [2]Université de Lyon, France, [3]European Organization for Nuclear Research, CERN, Switzerland
22	**Entanglement and thermodynamic properties of three coupled atoms** The entanglement properties of the Dicke model in a dispersive limit are compared with its thermodynamic features. Two regimes depending on the sign of the effective coupling constant are revealed. *L. Chakhmakhchyan[1,2], S. Guérin[1], C. Leroy[1], N. Ananikian[3]* [1]Laboratoire Interdisciplinaire Carnot de Bourgogne, Université de Bourgogne, France [2]Institute for Physical Research, Armenia [3]A. I. Alikhanyan National Science Laboratory, Armenia
23	**New relations for the derivative of the confluent Heun function** The cases when the derivative of the confluent Heun function is expressed in terms of another confluent Heun function are examined. It is shown that this occurs only for three specific sets of involved parameters. *V.A. Shahnazaryan[1], A.A. Movsesyan[2], S.P. Stepanyan[3], A.M. Ishkhanyan[4]* [1]Russian-Armenian (Slavonic) University, Armenia [2]Armenian State Pedagogical University, Armenia [3]Yerevan State University, Armenia [4]Institute for Physical Research, Armenia
24	**Complete-return spectrum for a generalized Rosen-Zener two-state term-crossing model** We present an analytical description of the complete-return resonances for a two-level atom interacting with an optical field defined by the Rosen-Zener model which defines both non-crossing and term-crossing processes with one or two crossing points. *T. Shahverdyan[1], H. Azizbekyan[2], C. Leroy[3], A. Ishkhanyan[2]* [1]Moscow Institute of Physics and Technology, Russia [2]Institute for Physical Research, Armenia [3]Laboratoire Interdisciplinaire Carnot de Bourgogne, Université de Bourgogne, France
25	**A wave function presentation and its normalization condition for a particle moving in an infinite space with an arbitrary one-dimensional potential** A connection between the normalization condition and a wave function representation for an arbitrary and a space infinite one-dimensional motion is discussed. *A.Zh. Khachatrian[1], N.A. Aleksanyan[2], V.A. Khoecyan[1]* [1]State Engineering University of Armenia [2]Artsakh State University

26	**Mathematical modeling for calculating energy of electrons in laser material interactions** By using Kepler's law on Sommerfeld modification of Bohr atomic structure with an electron trajectory at the cavity created in a laser material interaction due to bubble regime, found a better description of ellipsoid model. *Sajjad Heidari[1], Kazem Jamshidi-Ghaleh[2], Hossein Masalehdan[1,2]* [1]Islamic Azad University, Bonab, Iran [2]Azarbaijan Shahid Madani University, Tabriz, Iran
27	**Phase control of the nonlinear magneto-optical rotation in a GaAs quantum well waveguide** We control the nonlinear magneto-optical rotation (NMOR) in a GaAs quantum well waveguide via relative phase between driving fields and obtain considerable absorption-free NMOR, accompanied by a maximum intensity of y-component of the transmitted field. *Mohsen Ghaderi[1], Ali Mortezapour[2], Mohammad Mahmoudi[1]* [1]University of Zanjan, Iran [2]Institute for Advanced Studies in Basic Science (IASBS), Zanjan, Iran
28	**Collision of atoms under action of external magnetic and laser radiation fields with formation of Fano–Feshbach resonances** We investigate collision of two atoms in external magnetic field and in the field of laser radiation with formation of Fano–Feshbach resonances. The cross-sections of elastic and inelastic resonant scattering and expression for the scattering length depending on the external magnetic and laser radiation fields are obtain. *E.A. Gazazyan, A.D. Gazazyan, V.O. Chaltykyan* Institute for Physical Research, Armenia
29	**Director reorientation in the nematic liquid crystal due to the light beam absorption** This study shows that the absorbed energy from a laser light could provide the required energy for the fluid flow and the director reorientation of the NLC. *J.B. Poursamad[1], F. Nayyeri[1], V. Abediny[1], M. Sahrai[2]* [1]University of Bonab, Iran [2]University of Tabriz, Iran
30	**Shallow donor states near a semiconductor-metal interface in perpendicular magnetic field** In this paper we investigate the energy spectrum of a shallow donor near a semiconductor-metal interface in the presence of a magnetic field perpendicular to the interface using 1) the ”numerically exact” finite element method, and 2) a variational approach *A. A. Avetisyan[1], A. P. Djotyan[1], Bin Li[2], F. M. Peeters[2]* [1] Yerevan State University, Armenia [2] Universiteit Antwerpen, Belgium

31	**Theoretical study of the third type of thermomechanical effect in a radial cell of nematic liquid crystal** This presentation is about the third type thermomechanical effect in the radial cell of nematic liquid crystal. Director equation has been solved numerically and coefficient of nonlinearity has been obtained. *A.K. Aleksanyan, R.S. Hakobyan* Yerevan State University, Armenia
32	**Thermomechanical mechanism of orientational optical nonlinearity in radial nematic liquid crystal structure** In this presentation dynamic of director has been discussed theoretically in radial nematic liquid crystal structure for the first time. *A.K. Aleksanyan* Yerevan State University, Armenia
33	**Phase and amplitude control of optical bistability in the closed-loop three-coupled quantum wells** In this paper, we investigate the optical properties of a weak probe field in a closed-loop ladder-type configuration in an asymmetric semiconductor three-coupled quantum well system. *M. Mahmoudi and N. Heidari* University of Zanjan, Iran
34	**Nonlinear optical response of a parabolic semiconductor quantum dot** In this work, using the compact density matrix formalism, linear and nonlinear optical absorption based on the lowest exciton states are obtained in the model parabolic semiconductor quantum dot. Also, we will consider the effect of applied electric field. *Reza Safari*[1] , *Saeid Shojaei*[2] [1]Ahar branch-Islamic Azad university, Iran [2]Research institute for Applied Physics & Astronomy, University of Tabriz, Iran
35	**Investigation of spectral characteristics of chiral photonic structure with laser dye-doped isotropic polymer film** We study spectral characteristics of a system consisting of two CLC layers and a laser dye doped polymeric film sandwiched between them. We measure transmission, reflection and luminescence spectra of a system at various temperatures. Maximal intensity of luminescence spectrum at constant pumping power is observed at 18°C and the weakest luminescence is observed at 20°C, the luminescence spectra at higher and lower temperatures are “confined” between these two spectral curves. *T.M. Hovhannisyan, T.K. Dadalyan, R.B. Alaverdyan, A.S. Karapetyan* Yerevan State University, Armenia
36	**Hyperfine Paschen-Back regime realized in Cs nanocells: Experimental results and theoretical consideration** Theoretical curves for Cs, D2 line atomic transitions frequencies shifts as well as the modification of atomic transitions probabilities (line intensities) have been calculated for the range of magnetic field of 2 kG – 7 kG. *A. Sargsyan*[2], *G. Hakhumyan*[2], *C. Leroy*[1], *Y. Pashayan-Leroy*[1], *D. Sarkisyan*[2] [1]Laboratoire Interdisciplinaire Carnot de Bourgogne, Université de Bourgogne, France [2]Institute for Physical Research, Armenia