

Curriculum Vitae



Personal data:

Name: Hayk A. Sarkisyan

Born: 2 June, 1972, Yerevan, ARMENIA

Nationality: Republic of Armenia

Marital Status: Married two children

Professional addresses:

Engineering Physics Institute of Russian-Armenian University,
123 Hovsep Emin Str., Yerevan, 0051, Armenia

Faculty of Physics, Yerevan State University
1 Alex Manoogian Str., Yerevan, 0025, Armenia

Tel.: +374 26-55-97

Fax: +374 26-97-01

Mobile: +374 93 524718

E-mails: hayk.sarkisyan@rau.am

Education and Degrees:

2005

Doctor of Science in Physics (Habilitation)

Thesis: “Some questions of the theory of electronic and optical properties of low-dimensional semiconductor quantum structures” (“Некоторые вопросы теории электронных и оптических свойств квантовых низкоразмерных полупроводниковых структур”)

1997

PhD in Physics

Thesis: “Theoretical study of the excitonic states and optical properties of semiconductor nanostructures” (“Теоретическое исследование экситонных состояний и оптических свойств полупроводниковых наноструктур”)

PhD Student 1994-1997

Department of Solid State Physics, Faculty of Physics, Yerevan State University

1994

Diploma with Honors

Thesis: “Two-dimensional relativistic hydrogen atom”

1989-1994 Student of Faculty of Physics, Yerevan State University

Employment

2024-present	Head of the Laboratory of Physics of Nano and Mesostructures , Institute of Applied Problems of Physics, National Academy of Sciences of Armenia
2018-2023	Director of the Institute of Engineering and Physics , Russian-Armenian University
2015-present	Professor
2012-2018	Head of Department of General Physics and Quantum Nanostructures , Russian Armenian University
2008-2012	Dean Faculty of Physics and Technology , Russian Armenian University
2006-present	Professor Department of General Physics and Quantum Nanostructures, Russian Armenian University
2001-2006	Associated Professor Department of Physics, State Engineering University of Armenia
2002-2019	Senior Researcher Department of Physics, Yerevan State University
1997-2002	Researcher Faculty of Physics, Yerevan State University, Armenia

Awards:

- 2011 **State Award of the Republic of Armenia in the Area of Precise and Natural Sciences (The highest scientific award of Armenia)**
- 2007 **Republic of Armenia Presidential Award in Physics**
- 2017 **Medal of Premier-Minister of Republic of Armenia**
- 2013-2021 **Top 100 most effective scientists in Armenia initiated by the State Committee of Science**
- 2022 **Republic of Artsakh Anania Shirakatsi Medal**

Scientific Interests:

- Electronic properties of quantum nanostructures (quantum wells, wires, dots and nanoplatelets).
- Optical properties (interband and intraband transitions, impurity and excitonic light absorption, direct and non direct interband light absorption) of quantum nanostructures (quantum wells, wires, dots and nanoplatelets).
- Few-body problems in quantum dots.
- Electrodynamics and spin characteristics of quantum dots.
- Stationary adiabatic approximation for the description of quantum nanostructures.
- Thermodynamic and magnetic properties of few-particle gases in quantum dots and nanoplatelets.

Reviewer:

1. Physica **E**
2. Scientific Report
3. Physica **B**
4. Superlattices and Microstructures
5. Optics Communications
6. Solid State Communications
7. Physics Letters **A**
8. Journal of Mathematical Physics
9. Journal of Luminescence
10. European Physical Journal **B**
11. Modern Physics Letters **B**
12. International Journal of Theoretical Physics
13. Physica Status Solidi **B**
14. Applied Surface Science
15. Journal of Physics and Chemistry of Solids
16. Journal of Magnetism and Magnetic Materials

Editor:

- **Journal of Physics: Conference Series**, vol. 350. Proceedings of the 1st International Symposium on Optics and its Applications (OPTICS-2011), Yerevan-Ashtarak, Armenia, September 5-9, 2011 (*The Editors: A.B. Bhattacharjee, M.L. Calvo, E.M. Kazaryan, A.V. Papoyan, H.A. Sarkisyan*).
- **Journal of Physics: Conference Series**, vol. 672. Proceedings of the 2nd International Symposium on Optics and its Applications (OPTICS-2014), Yerevan-Ashtarak, Armenia, September 1-5, 2014 (*The Editors: M L Calvo, I N Dolganova, N Gevorgyan, A Guzman, A Papoyan, H Sarkisyan and S Yurchenko*).
- **Journal of Physics: Conference Series**, vol. 673. Proceedings of the 3rd International Symposium on Optics and its Applications (OPTICS-2015), Yerevan-Ashtarak, Armenia, October 1-5, 2015 (*The Editors: M L Calvo, I N Dolganova, N Gevorgyan, A Guzman, A Papoyan, H Sarkisyan and S Yurchenko*).
- **Journal of Physics: Conference Series**, vol. 2227. Proceedings of the 23rd Russian Youth Conference on Physics of Semiconductors and Nanostructures, Opto- and Nanoelectronics (RYCPS 2021) November 22- 26, 2021 Online (*The Editors: R.A. Suris,*

D.A. Firsov, V.A. Shalygin, H.A. Sarkisyan).

- “Actual problems of physics of low-dimensional systems”, Proceedings of the Conference Dedicated to the 70th Birthday of Academician E.M. Kazaryan (*Executive Editor H.A. Sarkisyan*).

Conferences organizing committee membership

- 2017 **5th International Symposium on Optics & its applications (OPTICS-2017)**, 3-7 July 2017, Wroclaw, Poland
- 2016 **4th International Symposium on Optics & its applications (OPTICS-2016)**, 25-28 July 2016, Yerevan & Ashtarak, Armenia
- 2015 **3rd International Symposium on Optics & its applications (OPTICS-2015)**, 1 - 5 October 2015, Yerevan & Ashtarak, Armenia
- 2014 **2nd International Symposium on Optics & its applications (OPTICS-2014)**, 1 - 5 September 2014, Yerevan & Ashtarak, Armenia
- 2014 **2nd International Advanced School on Frontiers in Optics & Photonics (FOP-2014)**, 30 August - 5 September 2014, Yerevan & Ashtarak, Armenia
- 2012 **International Advanced School on Frontiers in Optics & Photonics (FOP-2012)**, 2 - 7 July 2012, Yerevan & Ashtarak, Armenia
- 2011 **International Symposium on Optics & its applications (OPTICS-2011):**
5 - 9 September 2011, Yerevan & Ashtarak, Armenia
- 2011 **Photonics Micro- and Nanostructured Materials (PMNM-2011):**
28-31 June, 2011, Yerevan, Armenia
- 2000, **National Conference for Young Physicists “Physics-2000, 2002, 2004”**, 17-20
2002, September, 2000, Yerevan, Armenia; 25-28 September, 2002, Yerevan, Armenia; 22-
2004 24 April, 2004, Stepanakert, Artsakh

2022 – present Chairman of the dissertation council 052 "Physics of semiconductors"

Supervisor:

8 PhD – Theses

1. Lyudvig Petrosyan
2. Areg Meliksetyan
3. Marwan Zuhair (Iraq)
4. Ara Atayan
5. Narek Aghekyan
6. Hayk Ghaltaghchyan
7. Sergey Amirkhanyan
8. David Baghdasaryan
9. Mher Mkrtchyan

More than 30 Master Theses

PUBLICATIONS

INTERNATIONAL REFEREED JOURNALS

- 1 E.M. Kazaryan, K.A. Mkhoyan and H.A. Sarkisyan, "Indirect transitions caused by electron dislocation interaction in size-quantized semiconductor film", *Thin Solid Films*, vol. 302, pp. 54-57 (1997).
- 2 E.M. Kazaryan, K.A. Mkhoyan and H.A. Sarkisyan, "Indirect transitions in thin films due to Coulomb interactions between electrons", *Thin Solid Films*, vol. 338, pp. 185-187 (1999).
- 3 A.A. Avetisyan, A.P. Djotyan, E.M. Kazaryan and H.A. Sarkisyan, "Impurity states in narrow band semiconductor in a high magnetic field", *Physica Status Solidi B*, vol. 214, pp. 91-95 (1999).
- 4 E.M. Kazaryan, L.S. Petrosyan and H.A. Sarkisyan, "Energy levels of an electron with Kane's law of dispersion in a spherical microcrystal", *Physica E*, vol.8, pp. 19-23 (2000).
- 5 E.M. Kazaryan, L.S. Petrosyan and H.A. Sarkisyan, "Electronic states in narrow band gap semiconductor microcrystal with parabolic confinement in magnetic field", *Physica E*, vol.11, pp. 362-367 (2001).
- 6 E.M. Kazaryan, L.S. Petrosyan and H.A. Sarkisyan, "Impurity states in a parabolic quantum dot under action of a high magnetic field", *International Journal of Modern Physics B*, vol.15, pp.4103-4110 (2001).
- 7 H.A. Sarkisyan, "Electronic states in cylindrical quantum dot in the presence of parallel electrical and magnetic fields", *Modern Physics Letters B*, vol.16, pp.835-841 (2002).
- 8 E.M. Kazaryan, L.S. Petrosyan, H.A. Sarkisyan, "Impurity states in a narrow band gap semiconductor quantum dot with parabolic confinement potential", *Physica E*, vol.16, pp. 174-178 (2003).
- 9 L.G. Mardoyan, L.S. Petrosyan, H.A. Sarkisyan, "The charge-dyon bound system in the spherical quantum well", *Physical Review A*, vol.68, id 014103 (2003).
- 10 H.A. Sarkisyan, "Direct optical absorption in cylindrical quantum dot", *Modern Physics*

Letters B, vol.18, pp. 443-452 (2004).

11 M.S. Atoyán, E.M. Kazaryán, H.A. Sarkisyan, "Direct interband light absorption in a cylindrical quantum dot in quantizing magnetic field", *Physica E*, vol.22, pp. 860-866 (2004).

12 M.S. Atoyán, H.A. Sarkisyan, "Absorption coefficient of size-quantized $A^3 B^5$ semiconductor film with dislocations", *Physica B*, vol. 352, pp. 241-246 (2004).

13 M.S. Atoyán, E.M. Kazaryán, H.A. Sarkisyan, "Optical transitions in parabolic quantum dot", *Physics of Atomic Nuclei*, vol.68, pp. 1726-1729 (2005).

14 E.M. Kazaryán, A.A. Kostanyan, H.A. Sarkisyan, "Impurity optical absorption in parabolic quantum well", *Physica E*, vol.28, pp. 423-430 (2005).

15 M.S. Atoyán, E.M. Kazaryán, H.A. Sarkisyan, "Interband light absorption in parabolic quantum dot in the presence of electrical and magnetic fields", *Physica E*, vol.31, pp. 83-85 (2006).

16 E.M. Kazaryán, A.V. Meliksetyan, L.S. Petrosyan, H.A. Sarkisyan, "Impurity states of narrow-gap semiconductor parabolic quantum dot in the presence of extremely strong magnetic field", *Physica E*, vol.31, pp. 228-231 (2006).

17 H.A.Sarkisyan, "On the criteria of the applicability of the single-particle transitions in multi-particle system", *Physics of Part. and Nucl. Letters*, vol. 4, pp. 51-54 (2007).

18 V.A. Harutyunyan, E. M. Kazaryán, A. A. Kostanyan, H. A. Sarkisyan, "Interband transitions in cylindrical layer quantum dot: influence of magnetic and electric fields", *Physica E*, vol. 36, pp. 114-118 (2007).

19 E.M. Kazaryán, A.A. Kostanyan, H.A. Sarkisyan, "Optical absorption in GaAs quantum wells caused by donor-acceptor pair transitions", *Journal of Physics: Condensed Matter*, vol. 19, id 046212 (9pp) (2007).

20 L.G. Mardoyan, A.P. Nersessian, H.A. Sarkisyan, V.R. Yeghikyan, "Dipole transitions and Stark effect in the charge-dyon system", *Journal of Physics A: Mathematical and Theoretical*, vol. 40, pp. 5973-5980 (2007).

21 E.M. Kazaryán, A.V. Meliksetyan, H.A. Sarkisyan, "Interband transitions in a InSb narrow-gap cylindrical quantum dot", *Technical Physics Letters*, vol. 33, pp. 49-56 (2007).

22 E.M. Kazaryán, L.S. Petrosyan, H.A. Sarkisyan, "Hidden symmetry and excitonic transitions in the quantum well", *Physica E*, vol. 40, pp. 536-541 (2008).

23 M. Zoheir, A.Kh. Manaselyan, H.A. Sarkisyan, "Electronic states and Stark shift in narrow band InSb quantum spherical layer", *Physica E*, vol. 40, pp. 2945-2949 (2008).

- 24 A.K. Atayan, E.M. Kazaryan, A.V. Meliksetyan, H.A. Sarkisyan, "Magneto-absorption in cylindrical quantum dots", *European Physical Journal B*, vol. 63, pp. 485-492 (2008).
- 25 M. Zuhair, A.Kh. Manaselyan, H.A. Sarkisyan, "Magneto- and electroabsorption in narrow-gap InSb cylindrical layer quantum dot", *Physica E*, vol. 41, pp. 1583-1590 (2009).
- 26 A.A. Gusev, O. Chuluunbaatar, S.I. Vinitsky, V.L. Derbov, E.M. Kazaryan, A.A. Kostanyan, H.A. Sarkisyan, "Adiabatic approach to the problem of a quantum well with a hydrogen-like impurity", *Physics of Atomic Nuclei*, vol.73, pp. 331-338 (2010).
- 27 E.M. Kazaryan, A.V. Meliksetyan, H.A. Sarkisyan, "Interband absorption in a InSb narrow-band cylindrical quantum dot in presence of the magnetic field", *Journal of Computational and Theoretical Nanoscience*, vol. 7, N2, pp. 486-491 (2010).
- 28 A.K. Atayan, E.M. Kazaryan, A.V. Meliksetyan, H.A. Sarkisyan, "Interband magnetoabsorption in cylindrical quantum layer with Smorodinsky-Winternitz confinement potential", *Journal of Computational and Theoretical Nanoscience*, vol. 7, N6, pp. 1165-1171 (2010).
- 29 M.S. Atoyanyan, E.M. Kazaryan, B.Zh. Poghosyan, H.A. Sarkisyan, "Interband absorption and excitonic states in narrow band InSb spherical quantum dots", *Physica E*, vol. 43, pp. 1592-1596 (2011).
- 30 N.G. Aghekyan, E.M. Kazaryan, A.A. Kostanyan, H.A. Sarkisyan, "Two electronic states and state exchange time control in spherical nanolayer", *Superlattices and Microstructures*, vol. 50, pp. 199-206 (2011).
- 31 S. Liang, W.-F. Xie, H.A. Sarkisyan, A.V. Meliksetyan, H. Shen, "Nonlinear optical properties in a nanoring: quantum size and magnetic field effect", *Journal of Physics: Condensed Matter*, vol. 23, pp. 415302 (6 pages) (2011).
- 32 S. Liang, W.-F. Xie, H.A. Sarkisyan, A.V. Meliksetyan, H. Shen, "Electronic and optical properties of a nanoring in the presence of external magnetic field", *Superlattices and Microstructures*, vol. 51, pp. 868-876 (2012).
- 33 A.A. Kirakosyan, E.M. Kazaryan, V.N. Mughnetsyan, H.A. Sarkisyan, "Tunability of absorption threshold frequencies and Stark shift in the InSb narrow gap spherical quantum layer", *Semiconductor Science and Technology*, vol. 27, pp. 085003 (6 pages) (2012).
- 34 N.G. Aghekyan, E.M. Kazaryan, H.A. Sarkisyan, "Two Electron States in a Thin Spherical Nanolayer: Reduction to the Model of Two Electrons on a Sphere", *Few-Body Systems*, vol. 53, pp. 505-513 (2012).
- 35 A. A. Gusev, O. Chuluunbaatar, S. I. Vinitsky, K. G. Dvoyan, E. M. Kazaryan, H.A.

Sarkisyan, V. L. Derbov, A.S.Klombotskaya, V. V. Serov, "Adiabatic Description of Nonspherical Quantum Dot Models", *Physics of Atomic Nuclei*, vol.75, pp. 1210-1226 (2012).

36 E.M. Kazaryan, V.A. Shahnazaryan, H.A. Sarkisyan, "Quantum ring on sphere: electron state on spherical segment", *Physica E*, vol. 52, pp. 122-126 (2013).

37 A.A. Gusev, L.L. Hai, S.I. Vinitzky, O. Chuluunbaatar, V.L. Derbov, A.S. Klombotskaya, K.G. Dvoyan, H.A. Sarkisyan, "Analytical and numerical calculations of spherical and optical characteristics of spheroidal quantum dots", *Physics of Atomic Nuclei*, vol.76, pp. 1033-1055 (2013).

38 E.M. Kazaryan, V.A. Shahnazaryan, H.A. Sarkisyan, "Optical interband absorption and Stark shift in a quantum ring on a sphere", *Optics Communications*, vol. 315, pp. 253-257 (2014).

39 D.A. Baghdasaryan, E.M. Kazaryan, H.A. Sarkisyan, "Two-electron states and state exchange time control in parabolic quantum dot", *Physica E*, vol. 58, pp. 67-72 (2014).

40 E.M. Kazaryan, V.A. Shahnazaryan, H.A. Sarkisyan, A.A. Gusev, "Quantum model of Thomson helium atom", *Physics of Particles and Nuclei Letters*, vol. 11, pp. 189-197 (2014).

41 E.M. Kazaryan, V.A. Shahnazaryan, H.A. Sarkisyan, "Two electron states in a quantum ring on a sphere", *Few-Body Systems*, vol. 55, pp. 151-158 (2014).

42 N.G. Aghekyan, S.M. Amirkhanyan, E.M. Kazaryan, H.A. Sarkisyan, "Spin magnetic moment and persistent orbital currents in cylindrical nanolayer", *Superlattices and Microstructures*, vol. 69, pp. 87-98 (2014).

43 V.A. Harutyunyan, E. M. Kazaryan, H. A. Sarkisyan, "Electroabsorption in a narrow gap semiconductor nanotube in the field of uniformly charged ring", *Physica E*, vol. 64, pp. 7-14 (2014).

44 D.B. Hayrapetyan, E.M. Kazaryan, L.S. Petrosyan, H.A. Sarkisyan, "Core/shell/shell spherical quantum dot with Kratzer confining potential: Impurity states and electrostatic multipoles", *Physica E*, vol. 66, pp. 7-12 (2015).

45 E.M. Kazaryan, L.S. Petrosyan, V.A. Shahnazaryan, H.A. Sarkisyan, "Quasi-conical quantum dot: electron state and quantum transitions", *Communication in Theoretical Physics* vol. 63, pp. 255-260 (2015).

46 D.A. Baghdasaryan, H.Ts. Ghaltaghchyan, E.M. Kazaryan, H.A. Sarkisyan "Two-electron impurity in the parabolic quantum dot: uncertainty relation and perturbation approach", *Physica E*, vol. 70, pp. 52-57 (2015).

47 D.B. Hayrapetyan, A.V. Chalyan, E.M. Kazaryan, H.A. Sarkisyan, "Direct Interband Light Absorption in Conical Quantum Dot", *Journal of Nanomaterials*, vol. 2015, id915742, 6 pages

(2015).

48 D.B. Hayrapetyan, E.M. Kazaryan, H.A. Sarkisyan, "Implementation of Kohn's theorem for the ellipsoidal quantum dot in the presence of external magnetic field", *Physica E*, vol. 75, pp. 353-357 (2016).

49 D.B. Hayrapetyan, E.M. Kazaryan, H.A. Sarkisyan, "Magneto-absorption in conical quantum dot ensemble: possible applications for QD LED", *Optics Communications*, vol. 71, pp. 138-143 (2016).

50 D.B. Hayrapetyan, S.M. Amirkhanyan, E.M. Kazaryan, H.A. Sarkisyan, "Effect of hydrostatic pressure on diamagnetic susceptibility of hydrogenic donor impurity in core/shell/shell spherical quantum dot with Kratzer confining potential", *Physica E* vol. 84, pp. 367-371 (2016).

51 D.A. Baghdasaryan, E.M. Kazaryan, H.A. Sarkisyan, "Photoionization and electrostatic multipoles properties of spherical core/shell/shell quantum nanolayer with off-center impurity", *Superlattices and Microstructures*, vol. 104, pp. 69-77 (2017).

52 D.A. Baghdasaryan, E.M. Kazaryan, H.A. Sarkisyan, K.D. Moiseev, "Optical "visualization" of Pythagorean triples and electrostatic multipoles in quantum dash", *Physica E* vol. 90, pp. 170-174 (2017).

53 H.Ts. Ghaltaghchyan, D.B. Hayrapetyan, E.M. Kazaryan, H.A. Sarkisyan, "Few-body magneto-absorption in prolate ellipsoidal quantum dot", *Physics of Atomic Nuclei*, vol.80, pp. 769-773 (2017).

54 D.A. Baghdasaryan, D.B. Hayrapetyan, H.A. Sarkisyan, E.M. Kazaryan, S.I. Pokutnyi, "Exciton states and direct interband light absorption in the ensemble of toroidal quantum dots" *Journal of Nanophotonics*, vol. 11(4), 046004 (10 pages) (2017).

55 D.B. Hayrapetyan, G.L. Ohanyan, D.A. Baghdasaryan, H.A. Sarkisyan, S. Baskoutas, E.M. Kazaryan, "Binding energy and photoionization cross-section of hydrogen-like donor impurity in strongly oblate ellipsoidal quantum dot", *Physica E*, vol. 95, pp. 27-31 (2018).

56 A.N Sofronov, R.M. Balagula, D.A. Firsov, L.E. Vorobjev, A.A. Tonkih, H.A. Sarkisyan, D.B. Hayrapetyan, L.S. Petrosyan, E.M. Kazaryan, "Absorption of far-infrared radiation in Ge/Si quantum dots", *Semiconductors*, vol. 52, pp. 59-63 (2018).

57 D.A. Baghdasaryan, D.B. Hayrapetyan, E.M. Kazaryan, H.A. Sarkisyan, "Thermal and magnetic properties of electron gas in toroidal quantum dot", *Physica E*, vol. 101, pp. 1-4 (2018).

58 D.A. Baghdasaryan, D.B. Hayrapetyan, E.M. Kazaryan, S.I. Pokutnyi H.A. Sarkisyan, "Exciton states and optical absorption in core/shell/shell spherical quantum dot", *Chemical Physics*, vol. 506, pp. 26-30 (2018).

- 59 H. Sarkisyan, D. Hayrapetyan, L. Petrosyan, E. Kazaryan, A. Sofronov, R. Balagula, D. Firsov, L. Vorobjev, A. Tonkikh, "Realization of the Kohn's theorem in Ge/Si quantum dots with hole gas: theory and experiment", *Nanomaterials*, vol.9, 56 (14 pages) (2019).
- 60 D.B. Hayrapetyan, Yu. Bleyan, D.A. Baghdasaryan, H.A. Sarkisyan, S. Baskoutas, E.M. Kazaryan, "Biexciton, negative and positive trions in strongly oblate ellipsoidal quantum dot", *Physica E*, vol. 105, pp. 47-55 (2019).
- 61 V. Shahnazaryan, V. Mughnetsyan, I. Shelykh, H. Sarkisyan, "Exciton–exciton interactions in coaxial double quantum rings", *Nanomaterials*, vol.9, 1469 (13 pages) (2019).
- 62 D.B. Hayrapetyan, E.M. Kazaryan, M.A. Mkrtychyan, H.A. Sarkisyan, "Long-wave absorption of few-hole gas in prolate ellipsoidal Ge/Si quantum dot: implementation of analytically solvable Moshinsky model", *Nanomaterials*, vol.10, 1896 (12 pages) (2020).
- 63 T.A. Sargsian, M.A. Mkrtychyan, H.A. Sarkisyan, D.B. Hayrapetyan "Effects of external electric and magnetic fields on the linear and nonlinear optical properties of InAs cylindrical quantum dot with modified Pöschl-Teller and Morse confinement potentials", *Physica E*, vol. 126, 114440 (9 pages) (2021).
- 64 G.A. Mantashian, P.A. Mantashyan, H.A. Sarkisyan, E.M. Kazaryan, G. Bester, S. Baskoutas, D.B. Hayrapetyan, "Exciton-Related Raman Scattering, Interband Absorption and Photoluminescence in Colloidal CdSe/CdS Core/Shell Quantum Dots Ensemble", *Nanomaterials*, vol.11, 1274 (10 pages) (2021).
- 65 K.S. Khachatryan, M.A. Mkrtychyan, D.B. Hayrapetyan, E.M. Kazaryan, H.A. Sarkisyan, "Adiabatic description of the electroabsorption in strongly prolate and oblate conical quantum dots", *Physica E*, vol. 134, 114887 (9 pages) (2021).
- 66 G.A. Mantashian, N.A. Zaqaryan, P.A. Mantashyan, H.A. Sarkisyan, S. Baskoutas, D.B. Hayrapetyan, "Linear and Nonlinear Optical Absorption of CdSe/CdS Core/Shell Quantum Dots in the Presence of Donor Impurity", *Atom*, vol. 9 (4), pp. 75 (2021).
- 67 M.M. Mkrtychyan, , D.B. Hayrapetyan, E.M. Kazaryan, H.A. Sarkisyan M.Ya. Vinnichenko, V.A. Shalygin, D.A. Firsov, L.S. Petrosyan " Effects of an eexternal magnetic field on the interband and intraband optical properties of an asymmetric biconvex lens-shaped quantum dot", *Nanomaterials*, vol.12, 60 (13 pages) (2022).
- 68 Y.Bleyan, P. Mantashyan, E. Kazaryan, H. Sarkisyan, G. Accorsi, S. Baskoutas, D.Hayrapetyan "Non-Linear Optical Properties of Biexciton in Ellipsoidal Quantum Dot", *Nanomaterials*, vol.12, 1412 (12 pages) (2022).
- 69 M.Ya. Vinnichenko, I.S. Makhov, R.V. Ustimenko, T.A. Sargsian, H.A. Sarkisyan, D.B.

Hayrapetyan, D.A. Firsov, "Doping effect on the light absorption and photoluminescence of Ge/Si quantum dots in the infrared spectral range", *Micro and Nanostructures*, vol.169, id 207339 (8pages) (2022).

70 D.A. Baghdasaryan, V.A. Harutyunyan, D.B. Hayrapetyan, E.M. Kazaryan, S. Baskoutas, H.A. Sarkisyan, "Exciton States and Optical Absorption in CdSe and PbS Nanoplatelets", *Nanomaterials*, vol.12, 3690 (18 pages) (2022).

71 S.P. Gavalajyan, G.A. Mantashian, G.Ts. Kharatyan, H.A. Sarkisyan, P.A. Mantashyan, S. Baskoutas, D.B. Hayrapetyan, " Optical Properties of Conical Quantum Dot: Exciton-Related Raman Scattering, Interband Absorption and Photoluminescence", *Nanomaterials*, vol.13, 1393 (13 pages) (2023).

72 M.A. Mkrtchyan, D.B. Hayrapetyan, E.M. Kazaryan, H.A. Sarkisyan, S. Baskoutas, D.A. Firsov, M.Ya. Vinnichenko, " One- and few-particle optics of the valence band in lens-shaped Ge/Si quantum dots", *Physica E*, vol. 150, 115703 (7 pages) (2023).

73 D.A. Baghdasaryan, V.A. Harutyunyan, E.M. Kazaryan, H.A. Sarkisyan, L.S. Petrosyan, T.V. Shahbazyan, "Possibility of Exciton Bose–Einstein Condensation in CdSe Nanoplatelets", *Nanomaterials*, vol.13, 2734 (16 pages) (2023).

74 H Ts Ghaltaghchyan, DB Hayrapetyan, EM Kazaryan, HA Sarkisyan, "The electron gas in the core/shell cylindrical quantum dot: Thermodynamic and diamagnetic properties", *Micro and Nanostructures*, vol.174, id 207471 (11pages) (2023).

75 M.A. Mkrtchyan, E.M. Kazaryan, H.A. Sarkisyan, M.Y. Vinnichenko, D.A. Firsov, "Long-Wavelength Optics of a Pair-Interacting Electron Gas in a Lens-Shaped Quantum Dot: Two-Dimensional Moshinsky Model", *Optical Memory and Neural Networks*, vol. 32, pp. S428-S434 (2023).

76 D.A. Baghdasaryan, V.A. Harutyunyan, E.M. Kazaryan, H.A. Sarkisyan, "Multi-impurity system in CdSe nanoplatelets: electronic structure and thermodynamic properties", *Communication in Theoretical Physics*, vol. 76, id035702 (10 pages) (2024).

77 C.S. Garoufalis, D.B. Hayrapetyan, H.A. Sarkisyan, P.A. Mantashyan, Z. Zeng, I. Galanakis, G. Bester, T. Steenbock, S. Baskoutas, "Optical gain and entanglement through dielectric confinement and electric field in InP quantum dots", *Nanoscale*, DOI: 10.1039/d3nr06679g (8 pages) (2024).

78 M.A. Mkrtchyan, H.A. Sarkisyan, "Influence of external magnetic field on intraband transitions in lens-shaped quantum dot", *Journal of Instrumentation*, vol. 19, idC05014 (8 pages) (2024).

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