ARTAVAZD KOSTANYAN

Date of birth: May 29, 1981
Place of birth: Yerevan, Armenia
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Education

2004 Sep – 2007 Jun
PhD in Physics (Doctor of Physics)
Yerevan State University and Russian-Armenian University
PhD thesis: Optical absorption in quasi-two dimensional semiconductor structures
Thesis supervisor: Prof. Eduard M. Kazaryan

2002 Sep – 2004 Jun
Master's degree
Chair of Solid State Physics, Faculty of Physics, Yerevan State University, Yerevan, Armenia
MS thesis: Impurity transitions in quantum wells

1998 Sep – 2002 Jun
Bachelor's degree
Chair of Solid State Physics, Faculty of Physics, Yerevan State University, Yerevan, Armenia

Work Experience

2007 Sep – Present
Senior lecturer/Assistant professor
Department of Physics and Technology, Russian-Armenian University (RAU), Yerevan, Armenia

2006 Feb – Present
Research & development engineer (software)
Silicon Engineering Group, "Synopsys Armenia" CJSC, Yerevan, Armenia
Support and development of 2D charting components, statistical analysis tools (SPC control charts, ANOVA tests, etc). Integration of charting and statistical analysis components to Synopsys Yield Explorer (YE) application. Development of charting assistant (workflow) tool for spreadsheet data manipulation and statistical analysis.
Development of Sensitivity analysis application for YE

2002 Sep – 2003 Oct
Research assistant
Institute for Applied Problems of Physics, National Academy of Sciences, Yerevan, Armenia

Research Areas

Electronic and optical properties of semiconductor low dimensional systems (QW, QD)
impurity states, interband and interimpurity transitions, absorption coefficient, influence of external fields, different shaped QDs (quantum rings, core/shell QDs, nanoshells), two electron states, semiconductor QW kinetics
Calculation methods
effective mass method, geometrical adiabatic approximation, variational method, perturbation theory

Projects/Research grants

2007-2008 **Armenian State Target Program "Semiconductor Nanoelectronics" #041030**, Program manager professor E.M. Kazaryan

Teaching

2008 Sep – Present **Senior lecturer/Assistant professor,** Russian-Armenian University
Courses:

- undergraduate Introduction to Solid State Theory for physics and engineering majors (training, testing) – Spring; 2009-up to now
- undergraduate Introduction to Solid State Theory for physics and engineering majors (lectures, exam) – Spring; 2010-up to now
- undergraduate Introduction to Crystallography for physics and engineering majors (lectures, training, testing, exam) – Fall; 2009-up to now
- undergraduate Statistical Physics and Thermodynamics for physics and engineering majors (training, testing) – 2009-2012 Fall
- undergraduate General Physics (Classical Mechanics, Molecular Physics) for physics and engineering majors (laboratory, training, testing) – 2008-2013 Spring
- undergraduate General Physics (Classical Mechanics, Molecular Physics) for biomedicine majors (lectures, laboratory, testing, exam) – 2009-2013 Spring

2007 Sep – 2008 Jul **Lecturer,** Russian-Armenian University
Courses:

- undergraduate General Physics (Classical Mechanics, Molecular Physics, Electricity and Magnetism) for physics and engineering majors (laboratory, training, testing) 2007 Fall, 2008 Spring
- undergraduate General Physics (Classical Mechanics, Molecular Physics) for biomedicine majors (lectures, testing, exam) 2007 Fall, 2008 Spring

Main publications

1. EM Kazaryan, AA Kostanyan, HA Sarkisyan. Impurity optical absorption in parabolic quantum well, *Physica E* **28**, 423-430 (2005).
2. EM Kazaryan, AA Kostanyan, LS Petrosyan, HA Sarkisyan. Optical Transitions in Quantum Ring with the Confining Potential of Winternitz-Smorodinsky, *Abstract of International Conference – New Technologies for Development of Heterosemiconductors for Device Applications*, Armenia, Yerevan, September 21-23, pp. 28-29 (2006).
3. EM Kazaryan, AA Kostanyan, HA Sarkisyan. Optical absorption in GaAs quantum wells caused by donor-acceptor pair transitions, *Journal of Physics: Condensed Matter* **19**, 046212 (9pp) (2007).
4. VA Harutyunyan, EM Kazaryan, AA Kostanyan, HA Sarkisyan. Interband transitions in cylindrical layer quantum dot: influence of magnetic and electric fields, *Physica E* **36**, 114-118 (2007).
5. AA Kostanyan. Optical absorption caused by the transitions between donor-acceptor pairs in a parabolic quantum well, *Journal of Contemporary Physics (Arm. Acad. of Sci.)* **42**, № 3, 161-167 (2007).
6. EM Kazaryan, AA Kostanyan, HA Sarkisyan. Interband transitions in a spherical quantum layer in the presence of an electric field: spherical rotator model, *Journal of Contemporary Physics (Arm. Acad. of Sci.)* **42**, № 4, 145-150 (2007).
7. AA Gusev, O Chuluunbaatar, SI Vinitsky, VL Derbov, EM Kazaryan, AA Kostanyan, HA Sarkisyan. Adiabatic approach to the problem of a quantum well with a hydrogen-like impurity, *Physics of Atomic Nuclei* **73**, № 7, 331-338 (2010).
8. NG Aghekyan, EM Kazaryan, AA Kostanyan, HA Sarkisyan. Two electronic states in spherical quantum nanolayer, *Proc. SPIE* 7998, 79981C (2010)
9. NG Aghekyan, EM Kazaryan, AA Kostanyan, HA Sarkisyan. Two electronic states and state exchange time control in spherical quantum nanolayer, *Superlattices and Microstructures* **50**, iss. 3, 199-206 (2011)
10. EM Kazaryan, AA Kostanyan, PG Poghosyan. Impurity states in ZnSe/InP/ZnS core/shell/shell spherical quantum dot, *Journal of Physics: Conference Series* **350** (1), 012020 (2012).
11. AH Gevorgyan, EM Kazaryan, AA Kostanyan. Free carrier absorption in quantum well in consideration of the interaction with impurities, *Journal of Physics: Conference Series* 672 (1), 012008 (2016).
12. AH Gevorgyan, EM Kazaryan, AA Kostanyan. Intersubband absorption due to scattering on ionized impurities and acoustic phonons in parabolic quantum well, Journal of Physics: Conference Series 673 (1), 012016 (2016).
13. AH Gevorgyan, EM Kazaryan, AA Kostanyan. Intrasubband light absorption in a parabolic quantum well with consideration of scattering on the three-dimensional optical phonons, *Journal of Contemporary Physics (Armenian Academy of Sciences)* 51 (2), 150-156 (2016).
14. AH Gevorgyan, NE Mamikonyan, AA Kostanyan, EM Kazaryan. Intersubband optical absorption in GaAs parabolic quantum well due to scattering by ionized

impurity centers, acoustical and optical phonons, *Physica E: Low-dimensional Systems and Nanostructures* **103**, 246-251 (2018).

Programming tools of professional interest

Languages: C++
Libraries: QT (cross platform library)
Development tools: MS Visual Studio
Debuging tools: totalview, MS Visual Studio
Computational software: Wolfram Mathematica
Operating systems: MS Windows, Linux (Red Hat etc.)

Languages

	Speaking	**Reading**	**Writing**
English	*Good*	*Very Good*	*Very Good*
Russian	*Fluent*	*Fluent*	*Fluent*
Armenian (native)			

Conferences & workshops

2010 Jun-Jul	International Workshop on Cleanroom Training, **UNAM (National Nanotechnology Research Center), Bilkent University, Ankara, Turkey**
2009 Aug-Sep	International Advanced Research Workshop "Modern Problems in Optics & Photonics", **Ashtarak, Armenia**
2006 Sep	International Conference – New Technologies for Development of Heterosemiconductors for Device Applications, **Yerevan, Armenia**
2005 Jun	4th conference of young physicists of Armenia, **Yerevan, Armenia**

References

- Prof. Hayk Sarkisyan,
  Dean of Department of Physics and Technology,
  Russian-Armenian University,
  Yerevan, Armenia
- Prof. Eduard Kazaryan,
  Head of Chair of General and Theoretical Physics,
  Department of Physics and Technology,
  Russian-Armenian University,
  Yerevan, Armenia
- Prof. Sergue Vinitsky,
  Bogoliubov Laboratory of Theoretical Physics,
  Joint Institute for Nuclear Research,
  Dubna, Moscow region, Russian Federation