

# Врам Нерсесович Мугнецян

Научно-исследовательский институт физики  
Руководитель группы

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## 🎓 Образование

Учреждение	Ереванский государственный университет
Факультет	физический факультет
Дата	1999 - 2008
Степень / Звание	Аспирант

## 🎓 Ученое звание/Ученая степень

Учреждение	Ереванский государственный университет
Дата	2008
Степень / Звание	Кандидат наук
Специальность	Физико-математические науки
Научный руководитель	А.А. Киракосян
Научная тема	Theoretical investigation of the effects of interdiffusion and external fields on electronic and optical properties of semiconductor nanostructures

## 🌐 Знание языков

Հայերեն English Русский

## 💼 Опыт работы

Учреждение	Научная группа моделирования и симуляций наноструктур
Период времени	2023 до настоящего времени
Звание/степень	руководитель научной группы

Учреждение	Лаборатория физики твердого тела, Ереванский государственный университет
Период времени	2022 - 2023
Звание/степень	старший научный сотрудник

Учреждение	Кафедра физики твердого тела, Ереванский государственный университет
Период времени	2016 - 2023
Звание/степень	заведующий учебной лабораторией

Учреждение	Ереванский государственный медицинский университет
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Период времени	2015 до настоящего времени
Звание/степень	преподаватель
Учреждение	Лаборатория физики твердого тела, Ереванский государственный университет
Период времени	2008 - 2022
Звание/степень	научный сотрудник

## Публикации

Статья

### **Spin configuration of an array of quantum rings controlled by cavity photons**

Vidar Gudmundsson, Vram Mughnetsyan, Hsi-Sheng Goan, Jeng-Da Chai, Nzar Rauf Abdullah, Chi-Shung Tang, Valeriu Moldoveanu, Andrei Manolescu  
Physical Review B 2025 115304

Статья

### **Magneto-Optical Properties of Electron Gas in a Chain of Planar Quantum Rings: Effect of Screening on the Signature of Quantum Phase Interference**

Armen Harutyunyan, Vram Mughnetsyan, Albert Kirakosyan, Vidar Gudmundsson  
Annalen der Physik 2025 2400337

Статья

### **Effect of two-dimensional non-local screening on characteristics of transition metal dichalcogenide monolayers**

Vram Mughnetsyan, Aram Manaselyan, Ashot Movsisyan, Albert Kirakosyan  
Semiconductor Science and Technology 2024 045016

Статья

### **Planar quantum dots: Theoretical approaches**

Aram Manaselyan, Vram Mughnetsyan, Albert Kirakosyan  
Encyclopedia of Condensed Matter Physics (Second Edition) 2024 297-307

Статья

### **Magneto-optical properties of a quantum dot array interacting with a far-infrared photon mode of a cylindrical cavity**

Vidar Gudmundsson, Vram Mughnetsyan, Hsi-Sheng Goan, Jeng-Da Chai, Nzar Rauf Abdullah, Chi-Shung Tang, Valeriu Moldoveanu, Andrei Manolescu  
Physical Review B 2024 235306

Статья

### **Magnetic Properties of A Cavity-Embedded Square Lattice of Quantum Dots or Antidots**

Vram Mughnetsyan, Vidar Gudmundsson, Nzar Rauf Abdullah, Chi-Shung Tang, Valeriu Moldoveanu, Andrei Manolescu  
Annalen der Physik 2024 2300274

Статья

### **Tuning of paramagnetic and diamagnetic cavity photon excitations in a square array of**

**quantum dots in a magnetic field**

Vram Mughnetsyan, Vidar Gudmundsson, Hsi-Sheng Goan, Jeng-Da Chai, Nzar Rauf Abdullah,  
Chi-Shung Tang, Valeriu Moldoveanu, Andrei Manolescu  
Physical Review B 2024 205301

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*Статья*

**MAGNETO-OPTICAL PROPERTIES OF ARRAYED STRUCTURES OF CYLINDRICAL AND ELLIPTICAL QUANTUM DOTS**

Lilit YEGANYAN, Vram MUGHNETSYAN, Maryam MANSOURY

NANOCON Conference Proceedings - International Conference on Nanomaterials 2024 64-69

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*Статья*

**Controlling the excitation spectrum of a quantum dot array with a photon cavity**

Vidar Gudmundsson, Vram Mughnetsyan, Nzar Rauf Abdullah, Chi-Shung Tang, Valeriu Moldoveanu,  
Andrei Manolescu

Physical Review B 2023 115306

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*Статья*

**Hofstadter-like spectrum and magnetization of artificial graphene constructed with cylindrical and elliptical quantum dots**

Maryam Mansoury, Vram Mughnetsyan, Aram Manaselyan, Albert Kirakosyan, Vidar Gudmundsson,

Vigen Aziz-Aghchegala

Physics Letters A 2023 129115

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*Статья*

**Unified approach to cyclotron and plasmon resonances in a periodic two-dimensional GaAs electron gas hosting the Hofstadter butterfly**

Vram Mughnetsyan, Vidar Gudmundsson, Nzar Rauf Abdullah, Chi-Shung Tang, Valeriu Moldoveanu,

Andrei Manolescu

Physical Review B 2022 155302

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*Статья*

**Signature of miniband nodes in magneto-optical properties of one-dimensional superlattice of planar quantum rings**

Maryam Mansoury, Vigen Aziz-Aghchegala, Vram Mughnetsyan, Albert Kirakosyan, Vidar Gudmundsson

Physics Letters A 2022 128324

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*Статья*

**Electron-hole interaction in cylindrical quantum dots**

Vram Mughnetsyan, Ashot Movsisyan, Albert Kirakosyan

Physica E: Low-dimensional Systems and Nanostructures 2022 115366

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*Статья*

**Effects of a far-infrared photon cavity field on the magnetization of a square quantum dot array**

Vidar Gudmundsson, Vram Mughnetsyan, Nzar Rauf Abdullah, Chi-Shung Tang, Valeriu Moldoveanu,

Andrei Manolescu

Physical Review B 2022 115308

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Статья

**Electronic and Magnetic Properties of Laser Dressed Quantum Dot and Ring with Rashba Spin-Orbit Coupling**

Vram Mughnetsyan, Aram Manaselyan, Manuk Barseghyan, Albert Kirakosyan, Laura M. Perez,

David Laroze

Springer Proceedings in Physics (Optics and Its Applications) 2022 145-154

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Статья

**Interminiband absorption in a quantum ring superlattice in magnetic field with periodic vector potential**

Vram Mughnetsyan, Ara Atayan, Albert Kirakosyan, Vigen Aziz-Aghchegala

Physica E: Low-dimensional Systems and Nanostructures 2020 113722(1-6)

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Статья

**Control of electronic and optical properties of a laser dressed double quantum dot molecule by lateral electric field**

M.G. Barseghyan, V.N. Mughnetsyan, H.M. Baghranyan, F. Ungan, L.M. Perez, D. Laroze

Physica E: Low-dimensional Systems and Nanostructures 2020 114362(1-7)

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Статья

**Tuning of energy gap and 1D Dirac-like points in artificial graphene and boron nitride monolayer by an external electric field**

Vram Mughnetsyan

Micro and Nanostructures (Previously known as Superlattices and Microstructures) 2020 106700

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Статья

**Effect of anisotropic strain on the electronic characteristics of an InAs/GaAs honeycomb superlattice**

Vram Mughnetsyan, Albert Kirakosyan

Micro and Nanostructures (Previously known as Superlattices and Microstructures) 2019 243-251

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Статья

**Effect of the impurity on the Aharonov-Bohm oscillations and the intraband absorption in GaAs/ Ga<sub>1-x</sub>Al<sub>x</sub>As quantum ring under intense THz laser field**

M.G. Barseghyan, V.N. Mughnetsyan, L.M. Perez, A.A. Kirakosyan, D. Laroze

Physica E: Low-dimensional Systems and Nanostructures 2019 91-97

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Статья

**Exciton-Exciton Interactions in Coaxial Double Quantum Rings**

Vram Mughnetsyan, Vanik Shahnazaryan, Ivan Shelykh, Hayk Sarkisyan

Nanomaterials 2019 1469(1-13)

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Статья

**Rashba splitting of Dirac points and symmetry breaking in strained artificial graphene**

Vram Mughnetsyan, Aram Manaselyan, Manuk Barseghyan, Albert Kirakosyan, David Laroze

Physical Review B 2019 195132(1-8)

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Статья

**Effect of interdiffusion and external magnetic field on electronic states and light absorption in Gaussian-shaped double quantum ring**

V.L. Aziz Aghchegala, V.N. Mughnetsyan, A.A. Kirakosyan  
Physica E: Low-dimensional Systems and Nanostructures 2018 11-16

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*Статья*

**EFFECT OF DONOR IMPURITY ON AHARONOV-BOHM OSCILLATIONS IN A DOUBLE QUANTUM RING WITH GAUSSIAN CONFINEMENT**

V. N. MUGHNETSYAN

Proceedings of the YSU A. Physical and Mathematical Sciences 2018 205-212

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*Статья*

**Effect of interdiffusion and magnetic field on two-electron states in Gaussian-shaped double quantum rings**

V.L. Aziz Aghchegala, V.N. Mughnetsyan, A.A. Kirakosyan

Physica E: Low-dimensional Systems and Nanostructures 2017 157-163

<http://www.journals.elsevier.com/physica-e-low-dimensional-systems-and-nanostru...>

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*Статья*

**Effect of Rashba spin-orbit coupling and external magnetic field on electronic minibands in highly strained one-layer quantum ring superlattice**

Vram Mughnetsyan, Aram Manaselyan, Albert Kirakosyan

Micro and Nanostructures (Previously known as Superlattices and Microstructures) 2017 10-18

<http://www.journals.elsevier.com/superlattices-and-microstructures>

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*Статья*

**Strain distribution and band structure of InAs/GaAs quantum ring superlattice**

Vram Mughnetsyan, Albert Kirakosyan

Micro and Nanostructures (Previously known as Superlattices and Microstructures) 2017 318-327

---

*Статья*

**Elastic strain distribution in one layer quantum ring superlattice**

V.N. Mughnetsyan, A.A. Kirakosyan

Proceedings of the YSU A. Physical and Mathematical Sciences 2017 121-123

---

*Статья*

**Rashba Spin-Orbit Coupling in a Two-Dimensional Quantum Ring Superlattice**

V. Mughnetsyan, A. Manaselyan, A. Kirakosyan

Micro and Nanostructures (Previously known as Superlattices and Microstructures) 2015 584-591

<http://www.journals.elsevier.com/superlattices-and-microstructures>

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*Статья*

**Electron capture processes in quantum dots due to one-and two-phonon assisted transitions: The role of optical phonon confinement**

A L Vartanian, K A Vardanyan, V N Mughnetsyan, A A Kirakosyan

Journal of Physics: Conference Series 2015 012017/4pp

<http://iopscience.iop.org/journal/1742-6596>

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*Статья*

**Effect of phonon confinement on one- and two-polar optical phonon capture processes in quantum dots**

K.A. Vardanyan, A.L. Vartanian, V.N. Mughnetsyan, A.A.Kirakosyan

Physica E: Low-dimensional Systems and Nanostructures 2015 268-274

<http://www.journals.elsevier.com/physica-e-low-dimensional-systems-and-nanostru...>

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*Статья*

**Effect of interdiffusion on electronic states of strain-free Gaussian-shaped double quantum ring superlattice**

V.L. Aziz Aghchegala, V.N. Mughnetsyan, A.A. Kirakosyan

Physica E: Low-dimensional Systems and Nanostructures 2015 30-35

<http://www.journals.elsevier.com/physica-e-low-dimensional-systems-and-nanostru...>

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*Статья*

**Effect of interdiffusion on nonlinear intraband light absorption in Gaussian-shaped double quantum rings**

V.L. Aziz Aghchegala, V.N. Mughnetsyan, A.A. Kirakosyan

Physica E: Low-dimensional Systems and Nanostructures 2015 210-216

<http://www.journals.elsevier.com/physica-e-low-dimensional-systems-and-nanostru...>

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*Статья*

**Effect of interdiffusion on band structure in GaAs/Ga<sub>1-x</sub>Al<sub>x</sub>As quantum ring superlattices**

V. Mughnetsyan, A. Kirakosyan, A. Manaselyan

6-th International Conference on Nanomaterials, NANOCON-2014, Conference Proceedings 2015 47-53

[http://nanocon2014.tanger.cz/files/proceedings/20/index\\_en.htm](http://nanocon2014.tanger.cz/files/proceedings/20/index_en.htm)

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*Конференция*

**Elastic Strain Distribution in one layer InAs/GaAs Quantum Ring Superlattice.**

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**Electron capture processes in quantum dots due to one- and two-phonon assisted transitions: The role of optical phonon confinement.**

A.L. Vartanian, K.A. Vardanyan, V.N. Mughnetsyan, A.A. Kirakosyan

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*Конференция*

**Magneto-optical properties of arrayed structures of quantum dots and rings**

Yeganyan Lilit, Mughnetsyan Vram, Mansoury Maryam

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*Конференция*

**Magneto-Optical Properties of Artificial Graphene Constructed of Cylindrical and Elliptical Quantum Dots**

YEGANYAN Lilit, MUGHNETSYAN Vram, MANSOURY Maryam, KIRAKOSYAN Albert, GUDMUNDSSON Vidar

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