

# Anna Lyudvik Asatryan

## Research Institute of Physics

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## Language skills

English Русский

## Publications

*Article*

### **Exciton-optical phonon coupling in non-spherical quantum dots: A resonant Raman study of InP/ZnSe nanocrystals**

A.L. Vartanian, A.L. Asatryan, A.H. Movsisyan, L.A. Vardanyan, N. Del Fatti, F. Valle'e

Computational Materials Science 2025 113394/11

*Article*

### **Coherent Control of a Shallow Impurity Quantum States in Graphene Monolayer by Bichromatic Phase Modulated Laser Pulses: Influence of Relaxation Processes [Когерентное управление квантовыми состояниями мелкой примеси в монослое графена с помощью фазомодули]**

A.A. Avetisyan, A.P. Djotyan, G.P. Djotyan, A.L.Vartanian, A.L. Asatryan

Известия НАН РА. Физика (Journal of Contemporary Physics (Armenian Academy of Sciences) 2025 42-49

*Article*

### **Comparative study on polaronic quantum confinement effects in wurtzite ZnO and GaN nanowires under external fields**

Anna Asatryan, Arshak Vartanian, Serob Hayrapetyan, Tigran Ghukasyan, Artak Avetisyan, Ya-Hong Xie

Results in Physics 2025 108535

*Article*

### **Quasi-One-Dimensional Fröhlich Polaron Characteristics in ZnO Nanowires under the External Fields [Характеристики квазиодномерного фрëлиховского полярона в нанопроволоках ZnO во внешних полях]**

A. Asatryan, A. Movsisyan, L. Vardanyan, S. Hayrapetyan, A. Kirakosyan

Известия НАН РА. Физика (Journal of Contemporary Physics (Armenian Academy of Sciences) 2024 287 - 293

*Article*

### **Simultaneous effects of the confinement of polar optical phonons and spin-orbit coupling on the free carrier absorption of a nanowire**

A.L. Vartanian, T.K. Ghukasyan, A.L. Asatryan, K.A. Vardanyan, A.A. Kirakosyan

Micro and Nanostructures (Previously known as Superlattices and Microstructures) 2022 207287

*Article*

**Polaronic effects on the electron Raman scattering in a spherical anisotropic quantum dot**

T.K. Ghukasyan, A.L. Asatryan, L.A. Vardanyan, A.A. Kirakosyan, A.L. Vartanian

Armenian Journal of Physics 2022 175-181

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*Article*

**External electric and magnetic field effects on the polaron in a wurtzite nitride nanowire embedded in a nonpolar matrix**

Anna L. Asatryan, Ashot H. Movsisyan, Arshak L. Vartanian

EUROPEAN PHYSICAL JOURNAL B 2021 id 70/8

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*Manual*

**Պինդ մարմնի ֆիզիկայի լաբորատոր աշխատանքներ. մաս 2**

Ալբերտ Կիրակոսյան, Արշակ Վարդանյան, Աննա Ասատրյան, Արամ Մանասեյան,

Վալերի Հարությունյան

2021 190

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*Article*

**Effect of spin-orbit coupling on the hot-electron energy relaxation in nanowires**

A. L. Vartanian, A. L. Asatryan, A. G. Stepanyan, K. A. Vardanyan, A. A. Kirakosyan

International Journal of Modern Physics B 2020 2050322(1-13)

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*Article*

**Influence of image charge effect on the binding energy of hydrogen-like donor impurity in a near-surface quantum well under transverse electric field**

A.L. Vartanian, A.L. Asatryan, A.A. Kirakosyan, K.A. Vardanyan

Physica E: Low-dimensional Systems and Nanostructures 2019 1-4

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*Article*

**Influence of image charges on the impurity-related optical properties of near-surface quantum wells under a transverse electric field**

A.L. Vartanian, A.L. Asatryan, L.A. Vardanyan

Physica E: Low-dimensional Systems and Nanostructures 2019 115-120

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*Article*

**Polaron and dielectric mismatch effects on impurity-related optical absorption and refractive index changes in a spherical quantum dot**

A.L. Vartanian, A.L. Asatryan, L.A. Vardanyan

Micro and Nanostructures (Previously known as Superlattices and Microstructures) 2018 442-458

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

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*Article*

**Impurity-Bound Polaronic States in ZnSe Quantum Dots Under Electric Field: Image Charge Effect**

A. Vartanian, A. Asatryan, L. Vardanyan

JOURNAL OF ELECTRONIC MATERIALS 2018 4303-4307

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*Article*

**Energy loss rate of hot electrons due to polar-optical phonon modes in a semiconductor nanowire under transverse electric field**

A. Stepanyan, A. Asatryan, M. Yerosyan, K. Vardanyan, A. Kirakosyan, A. Vartanian

*Article*

**Influence of image charge effect on impurity-related optical absorption coefficients and refractive index changes in a spherical quantum dot.**

A.L. Vartanian, A.L. Asatryan, L.A. Vardanyan

Micro and Nanostructures (Previously known as Superlattices and Microstructures) 2017 205-212

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

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*Article*

**Energy-loss rate of hot electrons due to confined acoustic phonon modes in a semiconductor quantum wire under transverse electric field.**

A. Stepanyan, M. Yerasosyan, L. Vardanyan, A. Asatryan, A. Kirakosyan, A. Vartanian

Physica B: Condensed Matter 2017 102-107

<http://www.journals.elsevier.com/physica-b-condensed-matter>

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*Article*

**EFFECTS OF ELECTRIC FIELD AND IMAGE CHARGES ON THE IMPURITY-RELATED OPTICAL ABSORPTION COEFFICIENTS IN A SPHERICAL QUANTUM DOT**

A.L. Vartanian, A.L. Asatryan, A.A. Kirakosyan, A.A. Mkhitarian, S.S. Avetisyan

Proceedings of the YSU A. Physical and Mathematical Sciences 2017 124-127

<http://www.y-su.am/science/en/journals>

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*Article*

**Image Charge and Electric Field Effects on Hydrogen-like Impurity-bound Polaron Energies and Oscillator Strengths in a Quantum Dot**

L.A. Vardanyan, A.L. Vartanian, A.L. Asatryan, A.A. Kirakosyan

JOURNAL OF ELECTRONIC MATERIALS 2016 5847-5852

<http://www.springer.com/materials/optical+%26+electronic+materials/journal/11664>

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*Article*

**Electric field and image charge effects on impurity-bound polarons in a CdS colloidal quantum dot embedded in organic matrices**

A.L. Asatryan, A.L. Vartanian, A.A. Kirakosyan, L.A. Vardanyan

Physica B: Condensed Matter 2016 70-74

<http://www.journals.elsevier.com/physica-b-condensed-matter>

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*Manual*

**Պինդ մարմնի ֆիզիկայի լաբորատոր աշխատանքներ մաս I**

Արթուր Կիրակոսյան, Արշակ Վարդանյան, Աննա Ասատրյան, Արամ Մանասեյան,

Գառնիկ Վերմիշյան

2016 168

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*Article*

**The influence of electric field on the interface polaron properties in a wurtzite nitride nanowire.**

Anna L. Asatryan, Karen A. Vardanyan, Arshak L. Vartanian

Micro and Nanostructures (Previously known as Superlattices and Microstructures) 2015 286-294

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

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Article

**Polaronic effects due to quasi-confined optical phonons in wurtzite nitride nanowire in the presence of an electric field.**

Karen A. Vardanyan, Anna L. Asatryan, Arshak L. Vartanian

Micro and Nanostructures (Previously known as Superlattices and Microstructures) 2015 588-594

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

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Article

**The influence of electric field on the quasi-confined and interface polaron basic parameters in a wurtzite nitride quantum wire.**

A.L. Asatryan, K.A. Vardanyan, A.L. Vartanian, A.A. Kirakosyan

Journal of Physics: Conference Series 2015 012048/1-4

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

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Manual

**Պիևն մարմնի ֆիզիկայի խնդիրներ, Մաս I**

Ա.Ա. Կիրակոսյան, Ա.Լ. Վարդանյան, Ա.Լ. Ասատրյան

2015 154

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Conference

**Effect of image charges on the impurity-bound polaronic states in colloidal quantum dots embedded in different organic matrices.**

A.L. Vartanian, A.L. Asatryan, L.A. Vardanyan, A.A. Kirakosyan

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Conference

**The influence of electric field on the quasi-confined and interface polaron basic parameters in a wurtzite nitride quantum wire.**

A.L. Asatryan, K.A. Vardanyan, A.L. Vartanian, A.A. Kirakosyan

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Conference

**Impurity-bound polaronic states under an external electric field in quantum dots: Image charge effect.**

Lyudvig Vardanyan, Arshak Vartanian, Anna Asatryan

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Conference

**Electric field effect on hot-electron energy-loss rate via LA-phonon scattering in a cylindrical quantum wire.**

A. Stepanyan, L. Vardanyan, A. Asatryan, A. Vartanian, A. Kirakosyan

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Conference

**Rashba and Dresselhaus spin-orbit coupling effects on the electronic structure of quantum wires under the influence of in-plane magnetic field.**

V. Arzumanyan, K. Vardanyan, A. Asatryan, A. Vartanian

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Conference

**Influence of image charge effect on impurity-related optical absorption coefficient in a spherical quantum dot.**

A. Mkhitarian, L. Vardanyan, A. Asatryan, A. Vartanian

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Conference

**Image charge effect on oscillator strength and intradonor absorption spectra under external electric field in quantum dots.**

Arshak Vartanian, Anna Asatryan, Lyudvig Vardanyan

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*Conference*

**Impurity-Bound Polaronic States in ZnSe Quantum Dots under Electric Field: Image Charge Effect**

A. Asatryan, L. Vardanyan, A. Vartanian

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*Conference*

**The influence of the transverse electric field on the hot electron energy loss rate via polar-optical phonons in nanowires**

A.Asatryan, A.Stepanyan, M.Yeranosyan, A.Kirakosyan, A.Vartanian

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*Conference*

**Wurtzite-nitride quantum wires under electric and magnetic fields: Polaron basic parameters**

A.L. Asatryan, L.A. Vardanyan, A.A. Kirakosyan, A.L. Vartanian

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*Ematerial*

**Պինդ մարմնի ֆիզիկայի լաբորատոր աշխատանքներ**

Ալբերտ Կիրակոսյան, Արշակ Վարդանյան, Աննա Ասատրյան, Արամ Մանասեյան,

Գառնիկ Վերմիշյան

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*Conference*

**Exciton-Phonon Interaction in Elliptically Shaped Core-Shell Quantum Dots: Resonant Raman Scattering**

Asatryan A.L., Vardanyan L.A., Vartanian A.L.

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*Conference*

**Phonon-Assisted Optical Absorption for Nanowires with Spin-Orbit Coupling**

Ghukasyan T. K., Asatryan A.L., Vardanyan K.A., Kirakosyan A.A., Vartanian A.L.

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*Conference*

**First-order Raman spectra induced by the Fröhlich excitation-lattice interaction in a non-spherical core/shell nanocrystals**

Anna Asatryan, Ashot Movsisyan, Siranush Avetisyan, Tatevik Hayriyan, Arshak Vartanian

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*Conference*

**Exciton Resonant Raman Scattering in Colloidal Quantum Dots: The Role of the Fröhlich-Type Interaction**

A. Asatryan, A. Movsisyan, L. Vardanyan, A. Vartanian

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