

Khachik Vazgen Sedrakyan

✉ khsedrak@ysu.am

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Research Institute of Physics

Senior researcher

Education

Institution	YSU
Faculty	physics
Date	1980 - 1985
Degree name	Qualified specialist

Scientific Rank/degree

Institution	YSU
Date	2011
Degree name	Doctor
Specialty	Physico-mathematical sciences
Research Topic	Study of electron-positron vacuum and some induced processes in strong laser fields

Language skills

Հայերեն Русский English

Work experience

Institution	YSU
Period of time	1988 till now
Rank/degree	Senior researcher

Scientific interests

- nonlinear electrodynamics, particle acceleration, pair generation, physics of graphene-like nanosystems

Publications

Article

Elliptically Polarized High Laser Harmonics in the Hexagonal Graphene Quantum Dot
[Эллиптически поляризованные высокие лазерные гармоники в гексагональной графеновой квантовой точке]

A. G. Ghazaryan, N. O. Arustamyan, G. H. Chopuryan, Kh. V. Sedrakyan

Известия НАН РА. Физика (Journal of Contemporary Physics (Armenian Academy of Sciences) 2025
160-165

Article

Optical anisotropy of high-order harmonic generation by strong laser radiation in rectangular graphene quantum dot

Armenuhi G. Ghazaryan, Suren V. Sukiasyan, Khachik V. Sedrakian

Journal of Nanophotonics 2024 046002

Article

Multiphoton excitation and high harmonic generation in rectangular graphene quantum dot

A. G. Ghazaryan, Kh. V. Sedrakian, G. A. Musayelyan, T. M. Markosyan

Physica Scripta 2023 055921/13

Article

Graphene valley polarization as a function of carrier-envelope phase in few-cycle laser pulses and its footprints in harmonic signals

H. K. Avetissian, V. A. Sedrakyan, Kh. V. Sedrakian, G. F. Mkrtchian

Physical Review B 2023 205403

Article

**ГЕНЕРАЦИЯ ВЫСШИХ ГАРМОНИК С УЧЕТОМ МНОГОЧАСТИЧНОГО КУЛОНОВСКОГО
ВЗАИМОДЕЙСТВИЯ В ГРАФЕНОВОЙ КВАНТОВОЙ ТОЧКЕ**

Х. В. Седракян, А. Г. Казарян, Б. Р. Авчян, Г. А. Мусаелян, Т. М. Маркосян

Журнал экспериментальной и теоретической физики (Journal of Experimental and Theoretical
Physics)
2023 56-65

Article

High Harmonic Generation with Many-Particle Coulomb Interaction in Graphene Quantum Dot

Kh. V. Sedrakian, A. G. Ghazaryan, B. R. Avchyan, G. A. Musayelyan, T. M. Markosyan

Журнал экспериментальной и теоретической физики (Journal of Experimental and Theoretical
Physics)
2023 47-54

Article

ГАРМОНИКИ ВЫСШЕГО ПОРЯДКА В ГЕКСАГОНАЛЬНЫХ ГРАФЕНОВЫХ КВАНТОВЫХ ТОЧКАХ

Х.В. Седракян, А. Г. Казарян, Б. Р. Авчян, К.С. Погосян, Т.М. Маркосян

Журнал экспериментальной и теоретической физики (Journal of Experimental and Theoretical
Physics)
2023 457-466

Article

Higher-Order Harmonics in Hexagonal Graphene Quantum Dots

Kh. V. Sedrakian, A. G. Ghazaryan, B. R. Avchyan, Q. S. Poghosyan, T. M. Markosyan

Journal of Experimental and Theoretical Physics 2023 395-403

Article

Long-range correlation-induced effects at high-order harmonic generation on graphene

quantum dots

H. K. Avetissian, A. G. Ghazaryan, Kh. V. Sedrakian, G. F. Mkrtchian

Physical Review B 2023 165410

*Article***Генерация высоких гармоник в треугольных квантовых графеновых точках**

Б. Р. Авчян, А. Г. Казарян, К. А. Саргсян, Х. В. Седракиан

Журнал экспериментальной и теоретической физики (Journal of Experimental and Theoretical Physics)

2022 155-165

*Article***High Harmonic Generation in Triangular Graphene Quantum Dots**

B. R. Avchyan, A. G. Ghazaryan, K. A. Sargsyan, Kh. V. Sedrakyan

Journal of Experimental and Theoretical Physics 2022 125-134

*Article***High harmonic generation with many-body Coulomb interaction in rectangular graphene quantum dots of armchair edge**

Babken R. Avchyan, Armenuhi G. Ghazaryan, Samvel S. Israelyan, Khachik V. Sedrakian

Journal of Nanophotonics 2022 036001: 1-12

*Article***On Laser-Induced High-Order Wave Mixing and Harmonic Generation in a Graphene Quantum Dot**

B. R. Avchyan, A. G. Ghazaryan, K. A. Sargsyan, Kh. V. Sedrakian

JETP Letters 2022 428-435

*Article***О лазерно-индуцированной генерации высших гармоник и смещении волн высокого порядка в графеновой квантовой точке**

Авчян Б. Р., Казарян А. Г., Саргсян К.А., Седракиан Х. В.

Письма в Журнал экспериментальной и теоретической физики (Journal of Experimental and Theoretical Physics Letters)

2022 426-433

*Article***ОТКЛИК ВЫСШИХ ГАРМОНИК ИНТЕНСИВНОГО КОГЕРЕНТНОГО ЭЛЕКТРОМАГНИТНОГО ПОЛЯ НА ИЗМЕНЕНИЕ ТОПОЛОГИИ ПОВЕРХНОСТИ ФЕРМИ В ГРАФЕНОПОДОБНЫХ НАНОСИСТЕМАХ**

Авчян Б. Р., Казарян А. Г., Саргсян К. А., Седракиан Х. В.

Журнал экспериментальной и теоретической физики (Journal of Experimental and Theoretical Physics)

2021 1003-1012

*Article***Fermi Surface Topology Signature on the High Harmonics Generation in Graphene-Like Nanostructure**

B. R. Avchyan, A. G. Ghazaryan, K. A. Sargsyan, Kh. V. Sedrakian

Article

High-harmonic generation at particle-hole multiphoton excitation in gapped bilayer graphene

Hamlet K. Avetissian, Ara K. Avetissian, Armenuhi G. Ghazaryan, Garnik F. Mkrtchian,

Khachik V. Sedrakian

Journal of Nanophotonics 2020 026004(1-15)

Article

High harmonics generation in bilayer graphene at high Fermi energies induced by coherent THz-radiation

Armenuhi G. Ghazaryan, Hrant H. Matevosyan, Khachik V. Sedrakian

Journal of Nanophotonics 2020 046009(1-15)

Article

Third harmonic generation in gapped bilayer graphene

Ara Karapet Avetissian, Armenuhi Gevorg Ghazaryan, Khachik Vazgen Sedrakian

Journal of Nanophotonics 2019 036010(1-13)

Article

Microscopic nonlinear quantum theory of absorption of coherent electromagnetic radiation in doped bilayer graphene

Armenuhi G. Ghazaryan, Khachik V. Sedrakian

Journal of Nanophotonics 2019 046008(1-14)

Article

Multiphoton cross sections of conductive electrons stimulated bremsstrahlung in doped bilayer graphene

Armenuhi G. Ghazaryan, Khachik V. Sedrakian

Journal of Nanophotonics 2019 046004(1-14)

Article

Microscopic nonlinear quantum theory of absorption of strong electromagnetic radiation in doped graphene

Ara Karapet Avetissian, Armenuhi Gevorg Ghazaryan, Khachik Vazgen Sedrakian,

Babken Ruben Avchyan

Journal of Nanophotonics 2018 016006/12

<https://spie.org/publications/journals/journal-of-nanophotonics>

Article

High harmonic generation in Landau-quantized graphene subjected to a strong electromagnetic radiation

Hamlet K. Avetissian, Armenuhi G. Ghazaryan, Garnik F. Mkrtchian, Khachik V. Sedrakian

Journal of Nanophotonics 2017 016004: 1- 9

<https://spie.org/publications/journals/journal-of-nanophotonics>

Article

Induced nonlinear cross sections of conductive electrons scattering on the charged impurities

in doped graphene

Avetissian Ara K., Ghazaryan Armenuhi G., Sedrakian Khachik V., Avchyan Babken R.

Journal of Nanophotonics 2017 036004: 1-12

<https://spie.org/publications/journals/journal-of-nanophotonics>

Article

Generation of high energy electron and positron beams in solid-plasma-nanolayers under relativistic laser pulses

H.K. Avetissian, A.K. Avetissian, H.H. Matevosyan, G.F. Mkrtchian, Kh.V. Sedrakian

News and Reports from High Energy Density generated by Heavy Ion and Laser Beams 2015 2016 t2-77

https://repository.gsi.de/record/194814/files/HEDP_report__2k15_web-version.pdf

Article

Production of high energy-solid density electron bunches and hard γ -quanta and positron fluxes by ultrarelativistic lasers in solid-plasma targets

H.K. Avetissian, H. H. Matevosyan, G. F. Mkrtchian, Kh. V. Sedrakian

Physical Review Special Topics-Accelerators and Beams 2015 121301/7

<http://journals.aps.org/prab/about>

Conference

Nonlinear Absorption of Superintense Linearly Polarized Laser Radiation in Relativistic Plasma via Bremsstrahlung

A. K. Avetissian, A. G. Ghazaryan, S. S. Israelyan, Kh. V. Sedrakian

Conference

Landau-quantized graphene in strong radiation field and high harmonic generation

H.K. Avetissian, A.G. Ghazaryan, G.F. Mkrtchian, Kh.V. Sedrakian

Conference

Role of Coulomb Forces and Radiation Friction in Laser Production of High Density Electron Beams from Solid-Plazma-Targets

H.K. Avetissian, S. S. Israelyan, G. F. Mkrtchian, Kh. V. Sedrakian

Conference

Radiation Induced Nonlinear Cross Sections of Conductive Electrons Scattering on Charged Impurities in Doped Graphene

A.K. Avetissian, B.R.Avchyan, A.G. Ghazaryan, Kh.V. Sedrakian

Conference

Nonlinear Absorption Coefficient of Doped Graphene at Conductive Electrons Scattering on Charged Impurities

A.G. Ghazaryan, B.R. Avchyan, H.H. Matevosyan, Kh.V. Sedrakian

Conference

Impact of Coulomb collisions on laser-plasma interaction processes at high densities and relativistic intensities

Ghazaryan A.G., Israelyan S.S., Matevosyan H.H., Sedrakian Kh.V.

Conference

Impact of Electron-ion Coulomb Interaction in Above Threshold Ionization of Atom in Strong

Medium Infrared Laser Field

Avetissian A.K., Ghazaryan A.G., Sedrakian Kh.V., Avchyan B.R.

Conference

Nonlinear Absorption Coefficient of Doped Graphene by Conductive Electrons Scattering on Charged Impurities

A.K. Avetissian, A.G. Ghazaryan, Kh.V. Sedrakian

Conference

Radiation induced nonlinear cross sections of conductive electrons scattering on charged impurities in bilayer graphene

A. K. Avetissian, B. R. Avchyan, A. G. Ghazaryan, Kh. V. Sedrakian

Conference

X-ray Absorption in Plasma by One-photon Stimulated Bremsstrahlung with the Exact Consideration of Coulomb potential

A.K. Avetissian, A.G. Ghazaryan, Kh.V. Sedrakian

Conference

Third Order Harmonic Generation in Gapped Bilayer Graphene

A. K. Avetissian, A. G. Ghazaryan, Kh.V. Sedrakian

Conference

High-Harmonic Generation in Bilayer Graphene with an Electric Field Induced Band Gap

A. K. Avetissian, B. R. Avchyan, A. G. Ghazaryan, Kh. V. Sedrakian

Conference

Microscopic nonlinear quantum theory of strong electromagnetic radiation absorption in doped bilayer graphene

A. G. Ghazaryan, Kh. V. Sedrakian

Conference

Higher Harmonic Generation in AB Stacked Bilayer Graphene

A. G. Ghazaryan, Kh. V. Sedrakian

Conference

High harmonic generation in plane graphene quantum dots with different shapes and edges

B. R. Avchyan, K. A. Sargsyan, A. G. Ghazaryan, Kh. V. Sedrakian

Conference

High harmonic generation at particle-hole multiphoton excitation in gapped bilayer graphene

H. Avetissian, A. Avetissian, A. Ghazaryan, G. Mkrtchian, Kh. Sedrakian

Conference

Harmonic generation at low-energy particle-hole excitation in bilayer graphene

Armenuhi Ghazaryan, Hrant Matevosyan, Khachik Sedrakian

Conference

High harmonic generation on graphene quantum dots with collective scattering of electrons

B. Avchyan, A. Ghazaryan, S. Israelyan, Kh. Sedrakian

Conference

Laser induced high-order wave mixing and multiparticle interaction in graphene quantum dots

A.G. Ghazaryan, H.H. Matevosyan, Kh.V. Sedrakian

Conference

Optical anisotropy of high-order harmonic generation in rectangular graphene quantum dots

B. R. Avchyan, A. G. Ghazaryan, Q. S. Poghosyan, Kh. V. Sedrakian

Conference

Elliptically Polarized High-order Laser Harmonics in Hexagonal Graphene Quantum Dots

A. G. Ghazaryan, N. O. Arustamyan, G. H. Chopuryan, Kh. V. Sedrakian

Conference

High-Order Harmonics Generation in Graphene Quantum Dots by Bichromatic Laser Fields of Circular Polarization

Kh. V. Sedrakian, H. K. Avetissian, A. G. Ghazaryan, G. F. Mkrtchian

Conference

High Harmonic Generation in Graphene Quantum Dots with Laser Fields of Elliptic Polarization

A G. Ghazaryan, H. H. Matevosyan, N. O. Arustamyan, T. M. Markosyan, Kh. V. Sedrakian

Conference

High Harmonic Generation and Wave Mixing in Graphene Quantum Dots by Bichromatic Laser Fields of Circular Polarization

H. K. Avetissian, A. G. Ghazaryan, G. F. Mkrtchian, Kh. V. Sedrakian

Conference

Symmetrically driven enhancement of high harmonic generation in graphene quantum dots

Armenuhi Gevorg Ghazaryan, Hamlet Karo Avetissian, Garnik Felix Mkrtchian, Khachik Vazgen Sedrakian
