Khachik Vazgen Sedrakyan

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Research Institute of Physics
Ուժեղ դաշտերի ֆիզիկայի կենտրոն
Senior Researcher

Research Institute of Physics
Ուժեղ դաշտերի ֆիզիկայի կենտրոն
Senior Researcher

Education

Institution	Yerevan State University
Faculty	physics
Date	1980 - 1985
Degree name	Qualified specialist

Scientific Rank/degree

Institution	Yerevan State University
Date	2011
Degree name	Doctor
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

Publications

Article

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

Results in Physics 2026 108579

https://www.sciencedirect.com/science/article/pii/S2211379726000057

Article

High harmonic generation in rhombus graphene quantum dots with elliptically polarized strong laser pulses

A G Ghazaryan, Kh V Sedrakian

Journal of Physics B Atomic Molecular and Optical Physics 2026 015402

https://iopscience.iop.org/article/10.1088/1361-6455/ae340d

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

Proceedings of NAS RA Physics 2025 160-165

Conference

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

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

2025 363 - 363

https://www.grapheneconf.com/2025/index.php

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

2025 364-364

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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

2025 17-17

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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

2025 16 - 16

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Conference

Symmetrically driven enhancement of high harmonic generation in graphene quantum dots

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

2025 ID#: 1486

https://ieeenap.org/scientific-program/

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./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 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 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 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./Physical review. B 2023 165410

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

2023 138 - 138

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Article

Генерация высоких гармоник в треугольных квантовых графеновых точках
Б. Р. Авчян, А. Г. Казарян, К. А. Саргсян, Х. В. Седракян

Журнал Экспериментальной и Теоретической Физики 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 смешении волн высокого порядка в графеновой квантовой точке
Авчян Б. Р., Казарян А. Г., Саргсян К.А., Седракян Х. В.

Письма в Журнал экспериментальной и теоретической физики (Journal of Experimental and Theoretical Physics Letters)
2022 426-433

Conference

High harmonic generation on graphene quantum dots with collective scattering of electrons
B. Avchyan, A. Ghazaryan, S. Israelyan, Kh. Sedrakian

2022 028

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Conference

Laser induced high-order wave mixing and multiparticle interaction in graphene quantum dots
A.G. Ghazaryan, H.H. Matevosyan, Kh.V. Sedrakian

2022 039

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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., Седракян Х. В.

Журнал Экспериментальной и Теоретической Физики 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

Журнал Экспериментальной и Теоретической Физики 2021 883–891

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

2021 9

http://www.nano2020.gtu.ge/

Conference

High harmonic generation at particle-hole multiphoton excitation in gapped bilayer graphene
H. Avetissian, A. Avetissian, A. Ghazaryan, G. Mkrtchian, Kh. Sedrakian

2021 10

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Harmonic generation at low-energy particle-hole excitation in bilayer graphene
Armenuhi Ghazaryan, Hrant Matevosyan, Khachik Sedrakian

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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)

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. Sedrakyan

2019 P1.2021

https://www.epsplasma2019.eu/

Conference

Third Order Harmonic Generation in Gapped Bilayer Graphene

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

2019 GNN1057

http://www.gnnconf.org

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. Sedrakyan

2019 ICANM_125

http://icanm2019.iaemm.com/

Conference

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

A. G. Ghazaryan, Kh. V. Sedrakian

2019 ID-385

http://www.interphotonics.org/

Conference

Higher Harmonic Generation in AB Stacked Bilayer Graphene

A. G. Ghazaryan, Kh. V. Sedrakian

2019 P1-25

http://www.camnp2019.com/

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

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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.

2018 P2A1346-5

https://eventmobi.com/icops2018/speakers/281419/6893394

Conference

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

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

2018 ICANM_T_134

http://ICANM2018.iaemm.com

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

2018 16

http://gtu.ge/Eng/Conference/10986/

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

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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

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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

2017 P4-036

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.

2017 782

http://icpeac30.edu.au/

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 Ł2-77

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

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Conference

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

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

2016 78

http://www.nano2016.gtu.ge/

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

2016 3P-41

http://icops2016.ece.ualberta.ca/

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

2016 8

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

2015 1P-11
