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Научно-исследовательский институт физики
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🎓 Образование

Учреждение	Ереванский государственный университет
Факультет	Физический факультет, кафедра теоретической физики
Дата	1962 - 1967
Степень / Звание	Квалифицированный специалист

🎓 Ученое звание/Ученая степень

Учреждение	Государственный комитет народного образования СССР, Москва
Дата	1991
Степень / Звание	Профессор
Специальность	Физико-математические науки

Учреждение	ФИАН СССР им. П.Н. Лебедева, отдел теоретической физики им. И.Е. Тамма, Москва
Дата	1983
Степень / Звание	Доктор наук
Специальность	Физико-математические науки
Научная тема	Взаимодействие заряженных частиц с интенсивным электромагнитным излучением

🌐 Знание языков

Հայերեն Русский English

💼 Опыт работы

Учреждение	Ереванский государственный университет
Период времени	1971 до настоящего времени
Звание/степень	Директор, научный руководитель Центра физики сильных полей

🔬 Научные интересы

- Релятивистская нелинейная электродинамика, дираковский вакуум в сверхсильных полях, физика плазмы, лазерный ускоритель, рентгеновские и гамма-лазеры, нелинейная электродинамика наноструктур

Publications

Статья

Berry curvature and shift vector effects at high-order wave mixing in biased bilayer graphene

H.K. Avetissian, H.H. Matevosyan, G.F. Mkrtchian

Physical Review B 2025 045415

Статья

Intense high-order harmonic generation in the giant fullerene molecule C240

H. K. Avetissian, S. Sukiasyan, T. M. Markosyan, G. F. Mkrtchian

Physical Review B 2024 085401

Статья

Intense anomalous high harmonics in graphene quantum dots caused by disorder or vacancies

H. K. Avetissian, G. A. Musayelyan, G. F. Mkrtchian

Physical Review B 2024 085417

Статья

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

Статья

Disorder-induced effects in high-harmonic generation process in fullerene molecules

H.K. Avetissian, S. Sukiasyan, H.H. Matevosyan, G.F. Mkrtchian

Results in Physics 2023 106951/8

Статья

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

Статья

High-order harmonic generation in three-dimensional Weyl semimetals with broken time-reversal symmetry

H. K. Avetissian, V. N. Avetisyan, B. R. Avchyan, G. F. Mkrtchian

Physical Review A 2022 033107/1-8

Статья

Efficient high-harmonic generation in graphene with two-color laser field at orthogonal polarization

Hamlet K. Avetissian, Andreas Knorr, Garnik F. Mkrtchian

Статья

Saddle-point exciton signature on high-order harmonic generation in two-dimensional hexagonal nanostructures

H. K. Avetissian, S. S. Israelyan, H. H. Matevosyan, G. F. Mkrtchian

Physical Review A 2022 063504/1-9

Статья

Free-electron nanolaser based on graphene plasmons

H. K. Avetissian, B. R. Avchyan, H. H. Matevosyan, G.F. Mkrtchian

Laser Physics 2021 055801

Статья

High harmonic generation in fullerene molecules

H. K. Avetissian, A. G. Ghazaryan, G. F. Mkrtchian

Physical Review B 2021 125436

Статья

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)

Статья

Many-body effects for excitonic high-order wave mixing in monolayer transition metal dichalcogenides

H. K. Avetissian, G. F. Mkrtchian, K. Z. Hatsagortsyan

Physical Review Research 2020 023072(1-9)

Статья

On the extreme nonlinear optics of graphene nanoribbons in the strong coherent radiation fields

Hamlet K. Avetissian, Babken R. Avchyan, Garnik F. Mkrtchian, Karine A. Sargsyan

Journal of Nanophotonics 2020 026018(1-9)

Статья

High laser harmonics induced by the Berry curvature in time-reversal invariant materials

H. K. Avetissian, G. F. Mkrtchian

Physical Review B 2020 245422

Статья

Microscopic quantum description of second-order nonlinearities in two-dimensional hexagonal nanostructures beyond the Dirac cone approximation

H. K. Avetissian, G. F. Mkrtchian, K. G. Batrakov, S. A. Maksimenko

Physical Review B 2020 165406

Статья

Higher harmonic generation by massive carriers in buckled two-dimensional hexagonal nanostructures

H. K. Avetissian, G. F. Mkrtchian
Physical Review B 2019 085432(1-10)

Статья

Wave mixing and high harmonic generation at two-color multiphoton excitation in two-dimensional hexagonal nanostructures

H. K. Avetissian, A. K. Avetissian, B. R. Avchyan, G. F. Mkrtchian
Physical Review B 2019 035434(1-8)

Статья

Impact of electron-electron Coulomb interaction on the high harmonic generation process in graphene

H. K. Avetissian, G. F. Mkrtchian
Physical Review B 2018 115454(1-9)

Статья

Multiphoton excitation and high-harmonics generation in topological insulator

H. K. Avetissian, A. K. Avetissian, B. R. Avchyan, G. F. Mkrtchian
JOURNAL OF PHYSICS-CONDENSED MATTER 2018 185302(1-7)

Статья

Laser synthesis of hybrid nanoparticles for biomedicine

A.A. Lalayan, H.K. Avetissian
Proceedings of SPIE-Progress in Biomedical Optics and Imaging 2018 10582(1-4)

Статья

Multiphoton excitation and harmonic generation from the quantum electrodynamic vacuum

H. K. Avetissian, A. K. Avetissian, B. R. Avchyan, G. F. Mkrtchian
Laser Physics Letters 2018 126003(1-7)

Статья

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>

Статья

Collective two-boson decay of excitons in a Bose-Einstein condensate and generation of coherent photon-phonon radiation

H. K. Avetissian, A. K. Avetissian, G. F. Mkrtchian, B. R. Avchyan
Physical Review B 2017 045206/6
<http://journals.aps.org/prb/>

Статья

Coherent nonlinear optical response of graphene in the quantum Hall regime

H.K. Avetissian, G.F. Mkrtchian
Physical Review B 2016 045419/7
<http://journals.aps.org/prb/>

Статья

Enhanced high-order-harmonic generation and wave mixing via two-color multiphoton excitation of atoms and molecules

H.K. Avetissian, B.R. Avchyan, G.F. Mkrtchian

Physical Review A 2016 013856/7

<http://journals.aps.org/pr/>

Статья

Electron diffraction on a traveling wave: “Inelastic Kapitza-Dirac effect”

H.K. Avetissian

Laser and Particle Beams 2016 1-13

<http://iopscience.iop.org/journal/1612-202X>

Статья

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

Статья

Nonlinear absorption of high-intensity x-ray radiation in ultradense plasma

H.K. Avetissian, A.K. Avetissian, A.G. Ghazaryan, H.H. Matevosyan, G.F. Mkrtchian

News and Reports from High Energy Density generated by Heavy Ion and Laser Beams 2015 2016 t2 -78

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

Статья

Nonlinear response of the quantum Hall system to a strong electromagnetic radiation

H.K. Avetissian, G. F. Mkrtchian

Physics Letters A 2016 3924-3927

<http://www.journals.elsevier.com/physics-letters-a>

Монография

Relativistic Nonlinear Electrodynamics: The QED Vacuum and Matter in Super-Strong Radiation Fields

H.K. Avetissian

2016 506

Статья

Microscopic nonlinear relativistic quantum theory of absorption of powerful x-ray radiation in plasma

H. K. Avetissian, A. G. Ghazaryan, H. H. Matevosyan, G. F. Mkrtchian

Physical Review E 2015 043103/8

<https://journals.aps.org/pre/>

Статья

Multiphoton interaction of a qutrit with single-mode quantized field in the ultrastrong and deep strong coupling regimes

H.K. Avetissian, A.K. Avetissian, G. F. Mkrtchian, O.V. Kibis

Journal of Nanophotonics 2015 093064/14

Статья

Gamma-ray laser based on the collective decay of positronium atoms in a Bose-Einstein condensate

H.K. Avetissian, A.K. Avetissian, G. F. Mkrtchian

Physical Review A 2015 023820/10

<http://journals.aps.org/pr/>

Статья

Multiphoton dynamics of qutrits in the ultrastrong coupling regime with a quantized photonic field

H.K. Avetissian, A. K. Avetissian, G.F. Mkrtchian, O.V. Kibis

Journal of Experimental and Theoretical Physics 2015 925-933

<http://link.springer.com/journal/11447>

Статья

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>

Статья

Multiphoton Excitations and Harmonics Generation in Quantum Electrodynamical Vacuum

Avetissian H.K., Avetissian A.K., Avchyan B.R., Mkrtchian G.F.

News and Reports from High Energy Density generated by Heavy Ion and Laser Beams 2015 2015 62

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

Статья

Intense Coherent Gamma-Ray Source Based on the Collective Radiation of Positronium Atoms in a Bose-Einstein Condensate

Avetissian H.K., Avetissian A.K., Mkrtchian G.F.

News and Reports from High Energy Density generated by Heavy Ion and Laser Beams 2015 2015 61

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

Конференция

X-ray Absorption via Electron-ion SB in Maxwellian Plasma at the Exact Consideration of Coulomb Potential

H.K. Avetissian, A.K. Avetissian, A.G. Ghazaryan, G.F. Mkrtchian

Конференция

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

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

Конференция

High Energy-Density Positrons and Gamma-Quanta Fluxes from Nanotargets under Laser Beams of Ultrarelativistic Intensities

H.K. Avetissian

Конференция

Influence of excitonic effects on high harmonic generation by strong laser field in gated graphene

H.K. Avetissian, G.F. Mkrtchian

Конференция

Nonlinear response of graphene quantum Hall system to a strong laser radiation

H.K. Avetissian, G.F. Mkrtchian

Конференция

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

Конференция

High harmonics generation with 2D metallic carriers of topological insulators

H. K. Avetissian, A. K. Avetissian, B. R. Avchyan, G. F. Mkrtchian

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

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

Конференция

High Harmonic Generation in (3+1)-dimensional Weyl Semimetals

Hamlet Avetissian Karo, Vagharshak Avetisyan Narek, Babken Avchyan Ruben, Garnik Mkrtchian Felix

Конференция

Disorder-Induced Effects in High-Harmonic Generation Process in Fullerene Molecules

H. K. Avetissian, S. Sukiasyan, H. H. Matevosyan, G. F. Mkrtchian

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Berry curvature effects in high-order wave mixing in biased bilayer graphene

H. K. Avetissian, H. H. Matevosyan, G. F. Mkrtchian

Конференция

HIGH HARMONIC GENERATION BY STRONG LASER RADIATION IN FULLERENE MOLECULE C180

H. K. Avetissian, A. G. Ghazaryan, H. H. Matevosyan, G. F. Mkrtchian

Конференция

High-order Harmonic Generation in the Giant Fullerene Molecules

H. K. Avetissian, A. G. Ghazaryan, H. H. Matevosyan, G. F. Mkrtchian
