

Минас Карапетович Балян

Научно-исследовательский институт физики

Лаборатория физики твердого тела

Старший научный сотрудник

☎ 37477280093
28-43

✉ mbalyan@ysu.am

ℝ⁶

🎓 Образование

Учреждение	Ереванский государственный университет
Факультет	физика
Дата	1975 - 1984
Степень / Звание	Аспирант

🎓 Ученое звание/Ученая степень

Учреждение	Ереванский государственный университет
Дата	2017
Степень / Звание	Доктор наук
Специальность	Физико-математические науки
Научная тема	ТЕОРИЯ РЕНТГЕНОВСКИХ ДИФРАГИРОВАННЫХ ВОЛНОВЫХ ПОЛЕЙ, ДИНАМИЧЕСКОЙ КОГЕРЕНТНОЙ ГОЛОГРАФИИ И ИНТЕРФЕРОМЕТРИИ

🌐 Знание языков

Հայերեն English Русский

📁 Опыт работы

Учреждение	Ереванский госдарственный университет
Период времени	1980 до настоящего времени
Звание/степень	ведший научный сотрудник

🔬 Научные интересы

- рентгеновская динамическая дифракция, рентгеновская голография и интерферометрия, рентгеновская оптика

👥 Членство

Учреждение	Интернациональное объединение кристаллографов
------------	---

 Публикации

Статья

Double-slit X-ray dynamical diffraction in elastically deformed crystals

Minas K. Balyan

Acta Crystallographica A-Foundation and Advances 2025 294-305

Статья

Double-Slit X-Ray Dynamical Diffraction in the Transmitted Beam [Рентгеновская динамическая дифракция на двух щелях в проходящем пучке]

A. P. Aivazyan, M. K. Balyan, S. A. Petrosyan, V. P. Mkrtchyan

Journal of Contemporary Physics (Armenian Academy of Sciences) 2025 101-107

Статья

X-ray dynamical diffraction wavefront division interferometer (double-slit diffraction) with an asymmetric monochromator

Vahram Mkrtchyan, Minas Balyan, Sargis Petrosyan, Ashot Aivazyan

Acta Crystallographica A-Foundation and Advances 2025 438-448

Статья

Double-slit asymmetrical dynamical diffraction of X-rays in ideal crystals

Minas Balyan

Acta Crystallographica A-Foundation and Advances 2024 161-166

Статья

Measurements of the geometrical characteristics and refractive index of specimens made with X-ray interferometers

Vahram Mkrtchyan, Ashot Aivazyan, Sargis Petrosyan, Minas Balyan

Journal of Applied Crystallography 2024 499-502

Статья

Diffraction Fields and Fields of Charges, Expressed in Terms of Hertz Vector in Electrodynamics

M. K. Balyan

Journal of Contemporary Physics (Armenian Academy of Sciences) 2023 92-98

Статья

Double-slit X-ray dynamical diffraction in curved crystals

Minas K. Balyan

Acta Crystallographica A-Foundation and Advances 2023 353-359

Статья

Vector Monochromatic Diffraction Fields and Fields of Charges in Electrodynamics

M. K. Balyan

Journal of Contemporary Physics (Armenian Academy of Sciences) 2023 188-192

Статья

Electromagnetic Vector Monochromatic Diffraction Fields and Fields of Charges in Media

M.K.Balyan

Journal of Contemporary Physics (Armenian Academy of Sciences) 2023 251-256

Статья

Vector Non-Stationary Electromagnetic Diffraction Fields and Fields of Charges in Media

M. K. Balyan

Journal of Contemporary Physics (Armenian Academy of Sciences) 2023 349-354

Статья

Rocking Curves of X-Ray Asymmetrical Laue Diffraction in a Crystal with the Third-Order Nonlinear Response

M.K. Balyan

Journal of Contemporary Physics (Armenian Academy of Sciences) 2022 91-97

Статья

X-ray third-order nonlinear diffraction in the asymmetric reflection geometry

Minas K. Balyan

Acta Crystallographica A-Foundation and Advances 2022 349-358

Статья

Fields of Charges and Diffraction Fields in Electrodynamics

M.K.Balyan

Journal of Contemporary Physics (Armenian Academy of Sciences) 2022 331-341

Статья

Coherence Requirements for X-Ray Dynamical Diffraction Talbot Effect Inside a Crystal

M. K. Balyan

Journal of Contemporary Physics (Armenian Academy of Sciences) 2021 55-59

Статья

X-ray dynamical diffraction Talbot effect behind a crystal in free space

Minas Balyan, Levon Levonyan, Karapet Trouni

Acta Crystallographica A-Foundation and Advances 2021 149-159

Статья

Hard X-Ray Off-Axis Fresnel Holography using Two-Block Fresnel Zone Plate Interferometer

L.A.Haroutunyan, M.K.Balyan

Journal of Contemporary Physics (Armenian Academy of Sciences) 2021 154-157

Статья

X-ray third-order nonlinear asymmetric diffraction in the transmission geometry

M.K.Balyan

Physica Scripta 2021 125006 (21)

Статья

X-Ray Dynamical Diffraction Analogue of Talbot Effect in Case of Incident Finite Front Wave

M.K.Balyan

Journal of Contemporary Physics (Armenian Academy of Sciences) 2020 70-76

Статья

Testing of a 'hard' X-ray interferometer for experimental investigations

Tigran H. Eyranyan, Mesrop H. Mesropyan, Tamara S. Mnatsakanyan, Minas K. Balyan

Acta Crystallographica A-Foundation and Advances 2020 390-394

Статья

Investigation of third-order nonlinear dynamical X-ray diffraction based on a new exact solution

Minas K. Balyan

Journal of Synchrotron Radiation 2020 941-952

Статья

РЕНТГЕНОВСКАЯ ФРЕНЕЛЕВСКАЯ ОСЕВАЯ ГОЛОГРАФИЯ С ИСПОЛЬЗОВАНИЕМ ТРЕХБЛОЧНОГО ИНТЕРФЕРОМЕТРА ИЗ ФРЕНЕЛЕВСКИХ ЗОННЫХ ПЛАСТИН

Л.А. АРУТЮНЯН, М.К. БАЛЯН

Известия НАН РА. Физика (Journal of Contemporary Physics (Armenian Academy of Sciences) 2020 378-386

Статья

Spherical-wave X-ray dynamical diffraction Talbot effect inside a crystal

Minas K. Balyan, Levon V. Levonyan, Karapet G. Trouni

Acta Crystallographica A-Foundation and Advances 2020 494-502

Статья

X-ray two-wave dynamical diffraction analogue of Talbot effect

M K Balyan

Journal of Optics 2019 055603(1-14)

Статья

Dependence of X-ray asymmetrical Bragg case plane-wave rocking curves on the deviation from exact Bragg orientation in and perpendicular to the diffraction plane

Minas K. Balyan

Acta Crystallographica A-Foundation and Advances 2019 517-526

Статья

An X-Ray Dynamical Diffraction Analogue of Talbot Effect in the Transmitted Beam

M.K.Balyan

Journal of Contemporary Physics (Armenian Academy of Sciences) 2019 253-261

Статья

X-ray dynamical diffraction analogues of the integer and fractional Talbot effects

Minas K. Balyan

Journal of Synchrotron Radiation 2019 1650-1659

Статья

Rocking Curves of X-ray Asymmetrical Laue Diffraction with Two-Dimensional Curvature of Wave Front

M. K. Balyan

Journal of Contemporary Physics (Armenian Academy of Sciences) 2018 85-91

<https://link.springer.com/article/10.3103/S1068337218010103>

Статья

X-ray Fourier transform holography by amplitude-division-type Fresnel zone plate interferometer

Minas Balyan, Levon Haroutunyan

Journal of Synchrotron Radiation 2018 241-247

<http://journals.iucr.org/s/issues/2018/01/00/mo5163/index.html>

Статья

Dependence of X-ray plane-wave rocking curves on the deviation from exact Bragg orientation in and perpendicular to the diffraction plane for the asymmetrical Laue case

Minas K. Balyan

Acta Crystallographica A-Foundation and Advances 2018 204-215

<https://onlinelibrary.wiley.com/doi/full/10.1107/S205327331800181X>

Статья

Rocking Curves of X-Ray Asymmetric Bragg Diffraction with Two-Dimensional Curvature of Wave Front

M.K.Balyan

Journal of Contemporary Physics (Armenian Academy of Sciences) 2018 166-174

Статья

Experimental and theoretical investigations of an X-ray LLL interferometer with a wedge-shaped mirror plate

Tigran H. Eyranyan, Tamara S. Mnatsakanyan, Minas K. Balyan

Acta Crystallographica A-Foundation and Advances 2018 595-599

Статья

X-ray nonlinear Bragg diffraction

Minas K. Balyan

Journal of Nanophotonics 2017 016003-1 - 016-6

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

Статья

X-RAY THIRD-ORDER NONLINEAR RENNINGER EFFECT AND ROCKING CURVES

M.K.Balyan

Proceedings of the YSU A. Physical and Mathematical Sciences 2017 85-88

<http://www.ysu.am/science/en/journals>

Статья

Rocking Curves in the Laue Geometry Depending on the Departure of Incident Plane X-ray Wave from the Bragg Condition in the Diffraction Plane and in the Direction Perpendicular to the Diffraction Plane

M.K.Balyan

Journal of Contemporary Physics (Armenian Academy of Sciences) 2017 102-109

<http://www.springer.com/physics/particle+and+nuclear+physics/journal/11958>

Статья

X-Ray Interferometric Moire Fringes in the Presence of Temperature Gradient within the Frameworks of Eikonal Approximation

M.K.Balyan

Journal of Contemporary Physics (Armenian Academy of Sciences) 2017 161-166
<http://www.springer.com/physics/particle+and+nuclear+physics/journal/11958>

Статья

X-ray interferometric Fresnel Holography

M.K.Balyan

Journal of Contemporary Physics (Armenian Academy of Sciences) 2016 79-88

<http://www.springer.com/physics/particle+and+nuclear+physics/journal/11958>

Статья

Third-order nonlinear and linear time-dependent dynamical diffraction of X-rays in crystals

Minas K.Balyan

Journal of Synchrotron Radiation 2016 919-928

<http://journals.iucr.org/s/>

Статья

Рентгеновская интерферометрическая Фурье-голография

М.К.Балян

Известия НАН РА. Физика (Journal of Contemporary Physics (Armenian Academy of Sciences) 2016

388-401

<http://www.flib.sci.am/eng/Fizika/Frame.html>

Статья

X-ray third-order nonlinear plane-wave Bragg-case dynamical diffraction effects in a perfect crystal. Erratum

Minas K.Balyan

Journal of Synchrotron Radiation 2016 1272-1272

<http://journals.iucr.org/s/>

Статья

Diffraction of X-ray spatially inhomogeneous beam in a crystal with cubic nonlinearity

M.K.Balyan

Journal of Contemporary Physics (Armenian Academy of Sciences) 2016 391-397

<http://www.springer.com/physics/particle+and+nuclear+physics/journal/11958>

Статья

X-ray Plane-Wave Diffraction Effects in a Crystal with Third-Order Nonlinearity

M.K.Balyan

Crystallography Reports 2016 1039-1046

<http://link.springer.com/journal/11445>

Статья

X-ray Interferometric Fourier Holography

M.K.Balyan

Journal of Contemporary Physics (Armenian Academy of Sciences) 2016 289-298

<http://www.springer.com/physics/particle+and+nuclear+physics/journal/11958>

Статья

Bragg diffraction of spherical X-ray wave with allowance for two-dimensional curvature of wavefront

M.K.Balyan

Journal of Contemporary Physics (Armenian Academy of Sciences) 2015 134-143

<http://www.springer.com/physics/particle+and+nuclear+physics/journal/11958>

Статья

X-ray third-order nonlinear plane-wave Bragg-case dynamical diffraction effects in a perfect crystal

Minas K.Balyan

Journal of Synchrotron Radiation 2015 1410-1418

<http://journals.iucr.org/s/>

Статья

X-ray crystall-diffraction Fourier holography

M.K.Balyan

Journal of Contemporary Physics (Armenian Academy of Sciences) 2015 394-403

<http://www.springer.com/physics/particle+and+nuclear+physics/journal/11958>

Статья

X-ray third-order nonlinear dynamical diffraction of X-rays in a crystal

M.K.Balyan

Crystallography Reports 2015 993-1000

<http://link.springer.com/journal/11445>

Статья

Numerical reconstruction of an object image using an X-ray dynamical diffraction Fraunhofer hologram

Minas K.Balyan

Journal of Synchrotron Radiation 2014 127-130

<http://journals.iucr.org/s/>

Статья

Object image correction using an X-ray dynamical diffraction Fraunhofer hologram

Minas K.Balyan

Journal of Synchrotron Radiation 2014 449-451

<http://journals.iucr.org/s/>

Статья

X-ray Laue diffraction with allowance for second derivatives of amplitudes in dynamical diffraction equations

M.K.Balyan

Journal of Contemporary Physics (Armenian Academy of Sciences) 2014 130-141

<http://www.springer.com/physics/particle+and+nuclear+physics/journal/11958>

Статья

X-ray Bragg diffraction with allowance for the second derivatives of amplitudes in the dynamical diffraction equations

M.K.Balyan

Journal of Contemporary Physics (Armenian Academy of Sciences) 2014 284-294

<http://www.springer.com/physics/particle+and+nuclear+physics/journal/11958>

Статья

Theoretical consideration of an X-ray Bragg-reflection lens using the eikonal approximation

Minas K.Balyan

Journal of Synchrotron Radiation 2014 700-707

<http://journals.iucr.org/s/>

Статья

X-ray Laue diffraction with allowance for two-dimensional curvature of wave front: the concept of locally plane wave

M.K.Balyan

Journal of Contemporary Physics (Armenian Academy of Sciences) 2014 446-450

<http://www.springer.com/physics/particle+and+nuclear+physics/journal/11958>

Статья

Measurement of the refractive index of nematic liquid crystals 5CB by means of x-ray interferometry

Mkrtchyan V. P., Gasparyan L. G., Dadalyan T. K., Balyan M. K., Kuyumchyan A. V.

Proceedings of SPIE - The International Society for Optical Engineering 2014 920714

<http://spie.org/publications/conference-proceedings>

Статья

Transport equations of amplitudes in the eikonal approximation of dynamical diffraction equations

M.K.Balyan

Journal of Contemporary Physics (Armenian Academy of Sciences) 2013 46-50

<http://www.springer.com/physics/particle+and+nuclear+physics/journal/11958>

Статья

Eikonal approximation of dynamical diffraction equations for X-ray beams with two dimensional curvature of the wave-front. I. Basic formulas

M.K.Balyan

Journal of Contemporary Physics (Armenian Academy of Sciences) 2013 144-146

<http://www.springer.com/physics/particle+and+nuclear+physics/journal/11958>

Статья

Eikonal approximation of dynamical diffraction equations for X-ray beams with a two dimensional curvature of the wave front . II. Focusing of an X-ray beam by a crystal with non-plane entrance and exit surfaces. Symmetrical Laue case.

M.K.Balyan

Journal of Contemporary Physics (Armenian Academy of Sciences) 2013 247-252

<http://www.springer.com/physics/particle+and+nuclear+physics/journal/11958>

Статья

X-ray dynamical diffraction Fraunhofer holography

Minas K.Balyan

Journal of Synchrotron Radiation 2013 749-755

<http://journals.iucr.org/s/>

Статья

Eikonal approximation in the theory of X-ray interferometer

M.K.Balyan

Journal of Contemporary Physics (Armenian Academy of Sciences) 2012 241-247

<http://www.springer.com/physics/particle+and+nuclear+physics/journal/11958>

Статья

X-ray zone plates in combination with diffraction reflection

M.K.Balyan, A.H.Grigoryan, A.H.Toneyan

Journal of Contemporary Physics (Armenian Academy of Sciences) 2011 130-134

<http://www.springer.com/physics/particle+and+nuclear+physics/journal/11958>

Статья

Study of the X-ray anisotropy of materials via X-ray interferometry

V.P.Mkrtchyan, L.G.Gasparyan, M.K.Balyan

Inorganic Materials 2011 1676-1680

<http://link.springer.com/journal/10789>

Статья

X-ray focusing by the system of lens(es) placed inside asymmetric channel-cut crystals

Minas K.Balyan, Arshak H.Grigoryan, Albert H.Toneyan

Journal of Synchrotron Radiation 2010 332-347

<http://journals.iucr.org/s/>

Статья

Double slit dynamical diffraction of X-rays in ideal crystals (Laue case)

Minas K. Balyan

Acta Crystallographica A-Foundation and Advances 2010 660-668

<http://journals.iucr.org/a/>

Статья

Исследование рентгено-оптической анизотропии материалов рентгеноинтерферометрическим методом

Л.Г.Гаспарян, В.П.Мкртчян, М.К.Балян

Заводская лаборатория. Диагностика материалов. 2010 27-31

Статья

Искусственная ультразвуковая анизотропия кристаллов в области рентгеновских частот

Л.Г. Гаспарян, В.П. Мкртчян, М.К. Балян, А.С. Мелконян

Известия НАН РА. Физика (Journal of Contemporary Physics (Armenian Academy of Sciences) 2007 242-249

Статья

Модуляция рентгеновского пучка на основе модуляции кристаллической решетки

М.К.Балян, Л.А.Арутюнян

Известия НАН РА. Физика (Journal of Contemporary Physics (Armenian Academy of Sciences) 2006 50-55

<http://www.flib.sci.am/eng/Fizika/Frame.html>

Статья

Температурная искусственная анизотропия кристаллов в области рентгеновских частот

Л.Г. Гаспарян, В.П. Мкртчян, М.К. Балян, А.Г. Григорян

Известия НАН РА. Физика (Journal of Contemporary Physics (Armenian Academy of Sciences) 2006
374-378

Статья

О возможности создания новой дифракционно-рефракционной линзы для жесткого рентгеновского излучения

М.К.Балян, Л.Г.Гаспарян, А.Г.Григорян, М.М.Агасян

Известия НАН РА. Физика (Journal of Contemporary Physics (Armenian Academy of Sciences) 2004
262-264

<http://www.flib.sci.am/eng/Fizika/Frame.html>

Статья

X-ray Diffraction Investigations of Microstructure of calcium Hydroxide Crystallites in the Interfacial Transition Zone of Concrete

Valeri S.Harutyunyan, Vahram P.Mkrtchyan, Minas K.Balyan, Ashot P.Aivazyan, Eduard S. Abovyan,

Paulo J.M.Monteiro

Journal of the American Ceramic Society 2003 2162-2166

[http://onlinelibrary.wiley.com/journal/10.1111/\(ISSN\)1551-2916](http://onlinelibrary.wiley.com/journal/10.1111/(ISSN)1551-2916)

Статья

Micro strain distribution in calcium hydroxide present in the interfacial transition zone

V.S.Harutyunyan, V.P.Mkrtchyan, M.K.Balyan, E.S.Abovyan, P.J.M.Monteyro

Cement and Concrete Research 2000 709-713

<http://www.journals.elsevier.com/cement-and-concrete-research>

Статья

Усовершенствованная теория дифракции рентгеновских волн в условиях зеркального отражения

М.К.Балян, Л.В.Левонян

Известия НАН РА. Физика (Journal of Contemporary Physics (Armenian Academy of Sciences) 2000
309-319

<http://www.flib.sci.am/eng/Fizika/Frame.html>

Статья

Влияние внешних воздействий на Брэгг-Лауэвскую дифракцию рентгеновских лучей

Л.Г.Гаспарян, В.П. Мкртчян, А.Г. Григорян, М.К.Балян, С.А. Валасанян

Известия НАН РА. Физика (Journal of Contemporary Physics (Armenian Academy of Sciences) 2000
28-37

Статья

Исследование особенностей дифракции X-лучей в сочетаниях Брэгг-Лауэвских отражений

Л.Г.Гаспарян, В.П.Мкртчян, М.К.Балян, А.Г.Григорян, С.А.Валасанян

Известия НАН РА. Физика (Journal of Contemporary Physics (Armenian Academy of Sciences) 1999
162-171

<http://www.flib.sci.am/eng/Fizika/Frame.html>

Статья

Интерпретация электронно-микроскопических решеточных полос

М.К.Балян, А.М.Арустамян, К.Т.Габриелян

Кристаллография (Crystallography Reports) 1995 18-20

<http://www.maik.ru/ru/journal/krist/>

Статья

Электронно-микроскопические картины муара слабдеформированных кристаллов

М.К.Балян, К.Т.Габриелян

Известия НАН РА. Физика (Journal of Contemporary Physics (Armenian Academy of Sciences) 1994
82-89

<http://www.flib.sci.am/eng/Fizika/Frame.html>

Статья

**О возможности создания короткофокусной вертикально фокусирующей
рентгенодифракционной линзы**

Л.В.Левонян, М.К.Балян

Письма в журнал технической физики (Technical Physics Letters) 1993 47-50

<http://journals.ioffe.ru/journals/editors/4>

Статья

Two -dimensional diffraction focusing of X-ray Radiation in Laue Geometry

L.V.Levonyan, M.K.Balyan

PHYSICA STATUS SOLIDI A-APPLICATIONS AND MATERIALS SCIENCE 1993 247-255

[http://onlinelibrary.wiley.com/journal/10.1002/\(ISSN\)1862-6319/homepage/2231_ed...](http://onlinelibrary.wiley.com/journal/10.1002/(ISSN)1862-6319/homepage/2231_ed...)

Статья

Влияние кристаллических искажений на образование и вид маятниковых полос, I

Алумян К.В., Багдасарян Р.И., Балян М.К.

Кристаллография (Crystallography Reports) 1983 1024-1025

http://elibrary.ru/title_about.asp?id=7861

Статья

Влияние кристаллических искажений на образование и вид маятниковых полос, II

Балян М.К., Алумян К.В., Багдасарян Р.И.

Кристаллография (Crystallography Reports) 1983 1026-1027

<http://www.maik.ru/ru/journal/krist/>

Конференция

**X-ray interferometric temperature gradient moire fringes in the frame of eikonal
approximation**

Minas Balyan

Конференция

X-ray nonlinear Bragg diffraction

Minas Balyan

Конференция

X-Ray Dynamical Diffraction 'Third Order Nonlinear Renninger Effect'

Minas Balyan

Конференция

**Mathematical Reconstruction of an Object Image Using X-Ray Interferometric Fourier
Holography Method**

M.K.Balyan

Конференция

X-Ray Dynamical Diffraction Rocking Curves in Case of Third Order Nonlinear Renninger Effect

Minas Balyan

Конференция

Mathematical reconstruction of an object image using X-ray interferometric Fourier holography method

M.K.Balyan

Конференция

Measurement of the Refractive Index of Nematic Liquid Crystals 5CB by Means of X-ray Interferometry

V.P.Mkrtchyan, L.G.Gasparyan, T.K.Dadalyan, M.K.Balyan, A.V.Kuyumchyan

Конференция

X-ray dynamical diffraction Talbot effect under the condition of two-wave dynamical diffraction in crystals

M.K.Balyan

Конференция

X-ray LLL interferometer with wedge-shaped mirror plate

Tigran H. Eyranyan, Tamara S. Mnatsakanya, Minas K. Balyan

Конференция

Hard X-Ray Fourier Transform Holography Based on Two-Block Fresnel Zone Plate Interferometer with Common Optical Axis

L.A. Haroutunyan, M.K.Balyan

Конференция

Double-Slit X-ray Dynamical Diffraction in the Transmitted and Diffracted Beams

A. P. Aivazyan, M. K. Balyan, S. A. Petrosyan, V. P. Mkrtchyan
