

Ilya Feranchuk

List of Publications by Year in descending order

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120
papers

1,084
citations

516710

16
h-index

477307

29
g-index

125
all docs

125
docs citations

125
times ranked

420
citing authors

#	ARTICLE	IF	CITATIONS
1	The operator method of the approximate solution of the Schrödinger equation. Physics Letters, Section A: General, Atomic and Solid State Physics, 1982, 88, 211-214.	2.1	97
2	Parametric X-rays from ultrarelativistic electrons in a crystal : theory and possibilities of practical utilization. Journal De Physique, 1983, 44, 913-922.	1.8	93
3	Two-level system in a one-mode quantum field: numerical solution on the basis of the operator method. Journal of Physics A, 1996, 29, 4035-4047.	1.6	92
4	Operator Method in the Problem of Quantum Anharmonic Oscillator. Annals of Physics, 1995, 238, 370-440.	2.8	51
5	A comparative analysis of various mechanisms for the generation of X-rays by relativistic particles. Nuclear Instruments and Methods in Physics Research, Section A: Accelerators, Spectrometers, Detectors and Associated Equipment, 1985, 228, 490-495.	1.6	47
6	The X-ray radiation of ultrarelativistic electrons in a crystal. Physics Letters, Section A: General, Atomic and Solid State Physics, 1976, 57, 183-185.	2.1	37
7	Parametric beam instability of relativistic charged particles in a crystal. Physics Letters, Section A: General, Atomic and Solid State Physics, 1984, 102, 141-144.	2.1	35
8	Observation of monochromatic X-ray radiation from 900 MeV electrons transmitting through a diamond crystal. Physics Letters, Section A: General, Atomic and Solid State Physics, 1985, 110, 177-179.	2.1	35
9	Parametric x-ray radiation and coherent bremsstrahlung from nonrelativistic electrons in crystals. Physical Review E, 2000, 62, 4225-4234.	2.1	34
10	The operator method of the approximate description of the quantum and classical systems. Journal of Physics A, 1984, 17, 3111-3133.	1.6	29
11	Theoretical interpretation of parametric X-ray spectra. Nuclear Instruments and Methods in Physics Research, Section A: Accelerators, Spectrometers, Detectors and Associated Equipment, 1986, 249, 306-319.	1.6	22
12	Theoretical Concepts of X-Ray Nanoscale Analysis. Springer Series in Materials Science, 2014, , .	0.6	22
13	Angular distribution of parametric X-rays. Physics Letters, Section A: General, Atomic and Solid State Physics, 1985, 110, 477-479.	2.1	20
14	Non-perturbative Description of Quantum Systems. Lecture Notes in Physics, 2015, , .	0.7	20
15	A new method for calculation of crystal susceptibilities for X-ray diffraction at arbitrary wavelength. Acta Crystallographica Section A: Foundations and Advances, 2002, 58, 370-384.	0.3	19
16	Strong field effects in the evolution of a two-level system. Physics Letters, Section A: General, Atomic and Solid State Physics, 2011, 375, 385-389.	2.1	19
17	Self-consistent approach to x-ray reflection from rough surfaces. Physical Review B, 2007, 75, .	3.2	16
18	Collapse-and-revival dynamics of strongly laser-driven electrons. Physical Review A, 2013, 87, .	2.5	16

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19	Regularization of the Coulomb scattering problem. <i>Physical Review A</i> , 2004, 70, .	2.5	15
20	Analytical analysis of the "collapse-revival" effect in the Jaynes-Cummings model. <i>Physics Letters, Section A: General, Atomic and Solid State Physics</i> , 2009, 373, 517-520.	2.1	13
21	Resonant modification of the Rabi oscillations of a two-level system. <i>Physics Letters, Section A: General, Atomic and Solid State Physics</i> , 2009, 373, 4113-4116.	2.1	13
22	Analysis of the polaron problem on the basis of the operator method. <i>Journal of Physics C: Solid State Physics</i> , 1984, 17, 4309-4318.	1.5	12
23	Analytical ansatz for self-consistent calculations of x-ray transmission and reflection coefficients at graded interfaces. <i>Physical Review B</i> , 2003, 67, .	3.2	12
24	About new applications of parametric X-radiation for crystallography. <i>Acta Crystallographica Section A: Foundations and Advances</i> , 1999, 55, 466-470.	0.3	11
25	Optimal choice of a parameter for the operator method of the solution of the Schrodinger equation. <i>Journal of Physics A</i> , 1986, 19, 1583-1587.	1.6	10
26	Experimental observation of frequency tuning of X-ray radiation from nonrelativistic electrons in crystals. <i>Physics Letters, Section A: General, Atomic and Solid State Physics</i> , 2007, 363, 448-452.	2.1	10
27	Composition and phase stability upon annealing of gradient nitride coatings. <i>Surface and Coatings Technology</i> , 2008, 202, 2389-2393.	4.8	10
28	The regular perturbation theory in the strong-coupling polaron problem. <i>Journal of Physics C: Solid State Physics</i> , 1982, 15, 1965-1971.	1.5	9
29	Analytical investigation of the polaron problem. <i>Journal of Physics C: Solid State Physics</i> , 1985, 18, 5083-5094.	1.5	9
30	Analytical estimation of the energies and widths of the Rydberg states of a hydrogen atom in an electric field. <i>Physics Letters, Section A: General, Atomic and Solid State Physics</i> , 1989, 137, 385-388.	2.1	9
31	Specific heat from an unsymmetrical double well potential. <i>Chemical Physics</i> , 1991, 157, 61-66.	1.9	9
32	Physical background for parameters of the quantum Rabi model. <i>Journal of Physics A: Mathematical and Theoretical</i> , 2016, 49, 454001.	2.1	9
33	Operator method of calculation of the quasi-steady state eigenvalues. <i>Physics Letters, Section A: General, Atomic and Solid State Physics</i> , 1987, 125, 123-128.	2.1	8
34	Operator method for coupled anharmonic oscillators. <i>Journal of Physics A</i> , 1999, 32, 2115-2128.	1.6	8
35	Description of x-ray reflection and diffraction from periodical multilayers and superlattices by the eigenwave method. <i>Physical Review B</i> , 2003, 68, .	3.2	8
36	Analytic model of a multi-electron atom. <i>Journal of Physics B: Atomic, Molecular and Optical Physics</i> , 2017, 50, 245007.	1.5	8

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37	An analytical description of some quantum systems in periodic external fields and quasistationary systems. <i>Journal of Physics A</i> , 1987, 20, 3849-3860.	1.6	7
38	Estimation of the Debye temperature for crystals with polyatomic unit cell. <i>EPJ Applied Physics</i> , 2002, 19, 95-101.	0.7	7
39	Radical increase of the parametric X-ray intensity under condition of extremely asymmetric diffraction. <i>Nuclear Instruments & Methods in Physics Research B</i> , 2017, 412, 86-92.	1.4	7
40	Operator method of the uniformly fitted estimation of some integrals. <i>Physics Letters, Section A: General, Atomic and Solid State Physics</i> , 1984, 106, 109-112.	2.1	6
41	Experimental observation of the parametric X-rays from ultrarelativistic electrons. <i>Journal Physics D: Applied Physics</i> , 1986, 19, 171-176.	2.8	6
42	Development of tunable source on the basis of parametric X-radiation. <i>Nuclear Instruments and Methods in Physics Research, Section A: Accelerators, Spectrometers, Detectors and Associated Equipment</i> , 2005, 543, 55-57.	1.6	6
43	Calculation of physical properties of atoms and ions based on analytical perturbation theory. <i>Journal of Applied Spectroscopy</i> , 2011, 77, 749-757.	0.7	6
44	Lattice tilt, concentration, and relaxation degree of partly relaxed InGaAs/GaAs structures. <i>Physica Status Solidi (A) Applications and Materials Science</i> , 2011, 208, 2539-2543.	1.8	6
45	Ultrarelativistic particle radiation in a crystal and observation of the $\hat{\rho}^3$ correlations. <i>Physics Letters, Section A: General, Atomic and Solid State Physics</i> , 1980, 76, 452-454.	2.1	5
46	Control of the atom (nucleus) lifetime in the excited state by means of a low-frequency external field. <i>Journal of Physics B: Atomic, Molecular and Optical Physics</i> , 2002, 35, 3957-3965.	1.5	5
47	About non-Gaussian behaviour of the Debye-Waller factor at large scattering vectors. <i>EPJ Applied Physics</i> , 2003, 24, 21-26.	0.7	5
48	Grazing incidence parametric X-ray radiation from the relativistic electron beam moving in parallel to the superlattice surface. <i>EPJ Applied Physics</i> , 2007, 38, 135-140.	0.7	5
49	Long-range scans and many-beam effects for high-resolution x-ray diffraction from multilayered structures: Experiment and theory. <i>Physical Review B</i> , 2008, 77, .	3.2	5
50	X-ray dynamical diffraction from partly relaxed epitaxial structures. <i>Physical Review B</i> , 2009, 80, .	3.2	5
51	Regular perturbation theory for two-electron atoms. <i>Physics Letters, Section A: General, Atomic and Solid State Physics</i> , 2011, 375, 2550-2554.	2.1	5
52	Time dependence of X-ray polarizability of a crystal induced by an intense femtosecond X-ray pulse. <i>IUCr</i> , 2014, 1, 402-417.	2.2	5
53	Parametric X-rays from a polycrystalline target. <i>Nuclear Instruments & Methods in Physics Research B</i> , 2015, 360, 75-80.	1.4	5
54	Parametric X-ray radiation in the Smith-Purcell geometry for non-destructive beam diagnostics. <i>Nuclear Instruments & Methods in Physics Research B</i> , 2019, 444, 125-134.	1.4	5

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55	Analytical approximation for the thermodynamic properties of a diatomic gas. <i>Chemical Physics Letters</i> , 1988, 150, 78-81.	2.6	4
56	Operator method for nonperturbative calculation of the thermodynamic values in quantum statistics: diatomic molecular gas. <i>Journal of Physics A</i> , 2004, 37, 9841-9860.	1.6	4
57	Dynamical diffraction theory for the parametric X-rays and coherent bremsstrahlung. <i>Nuclear Instruments & Methods in Physics Research B</i> , 2005, 234, 148-158.	1.4	4
58	Nonasymptotic analysis of relativistic electron scattering in the Coulomb field. <i>Physical Review A</i> , 2010, 82, .	2.5	4
59	Influence of Surface Roughness on Evaluation of Stress Gradients in Coatings. <i>Materials Science Forum</i> , 2011, 681, 121-126.	0.3	4
60	Increase of parametric X-ray intensity due to the Borrmann effect. <i>Nuclear Instruments & Methods in Physics Research B</i> , 2013, 311, 78-85.	1.4	4
61	Covariant description of X-ray diffraction from anisotropically relaxed epitaxial structures. <i>Journal of Applied Crystallography</i> , 2013, 46, 919-925.	4.5	4
62	Spontaneous emission in a quantum system driven by a resonant field beyond the rotating wave approximation. <i>Journal of Physics B: Atomic, Molecular and Optical Physics</i> , 2017, 50, 105501.	1.5	4
63	Radiation-induced interaction potential of two qubits strongly coupled with a quantized electromagnetic field. <i>Physical Review A</i> , 2020, 102, .	2.5	4
64	About a possibility of a decrease in the radiative width of excited levels of atoms and nuclei. <i>Physics Letters, Section A: General, Atomic and Solid State Physics</i> , 1981, 83, 126-128.	2.1	3
65	Transition radiation from electrons: Application to thin film and superlattice analysis. <i>Physical Review B</i> , 2001, 63, .	3.2	3
66	Coherent bremsstrahlung and parametric X-ray radiation from nonrelativistic electrons in a crystal. <i>Technical Physics Letters</i> , 2006, 32, 392-395.	0.7	3
67	Transformation of a Rabi oscillation spectrum for a two-level system in a strong resonant field. <i>Journal of Applied Spectroscopy</i> , 2011, 77, 832-840.	0.7	3
68	Parametric $\hat{\Gamma}^3$ -radiation from electrons in Mössbauer crystal. <i>EPJ Applied Physics</i> , 2013, 62, 10702.	0.7	3
69	Justification of the single-mode approximation for a finite-duration laser pulse interacting with an electron. <i>Journal of Physics B: Atomic, Molecular and Optical Physics</i> , 2014, 47, 115601.	1.5	3
70	Regularization of ultraviolet divergence for a particle interacting with a scalar quantum field. <i>Physical Review D</i> , 2015, 92, .	4.7	3
71	Analytic approximation for eigenvalues of a class of PT -symmetric Hamiltonians. <i>Physical Review A</i> , 2017, 96, .	2.5	3
72	A zone spectrum of the ultrarelativistic channelled particles in a crystal. <i>Journal De Physique</i> , 1982, 43, 1687-1697.	1.8	3

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73	The operator method in the direct and inverse problems of the spectroscopy. <i>Molecular Physics</i> , 1988, 64, 589-594.	1.7	2
74	Parametric X-rays in the case of degenerate two-beam diffraction. <i>Journal Physics D: Applied Physics</i> , 1988, 21, 831-833.	2.8	2
75	Program complex for the description of electromagnetic processes during planar and axial channeling of relativistic particles. <i>Nuclear Instruments & Methods in Physics Research B</i> , 1994, 88, 369-381.	1.4	2
76	Interference of parametric X-ray and coherent Bremsstrahlung radiation from nonrelativistic electrons: application to the phase analysis in crystallography. <i>Acta Crystallographica Section A: Foundations and Advances</i> , 2001, 57, 283-289.	0.3	2
77	A dynamical theory for the X-ray diffraction from the partially relaxed layers. <i>Physica Status Solidi (A) Applications and Materials Science</i> , 2009, 206, 1695-1698.	1.8	2
78	Calculation of X-Ray Stress Factors Using Vector Parameterization and Irreducible Representations for SO(3) Group. <i>Materials Science Forum</i> , 2011, 681, 387-392.	0.3	2
79	Bogolyubov transformation in the theory of strong coupling of a heavy particle to a scalar field. <i>Theoretical and Mathematical Physics (Russian Federation)</i> , 1977, 32, 730-736.	0.9	1
80	Theory of the strong coupling of a particle and a quantized field with internal degrees of freedom. <i>Theoretical and Mathematical Physics (Russian Federation)</i> , 1981, 47, 313-320.	0.9	1
81	Theoretical interpretation of radiation spectra from channeled positrons. <i>Physics Letters, Section A: General, Atomic and Solid State Physics</i> , 1985, 112, 346-351.	2.1	1
82	Investigation of the Transition between Large and Small Radius Polarons in a One-Dimensional Crystal. <i>Physica Status Solidi (B): Basic Research</i> , 1989, 155, 169-177.	1.5	1
83	Statistical description of particle correlations in porous media. <i>Materials Letters</i> , 1989, 8, 329-334.	2.6	1
84	Statistical description of the particle spatial distribution in a porous medium. <i>Soviet Powder Metallurgy and Metal Ceramics (English Translation of Poroshkovaya Metallurgiya)</i> , 1991, 30, 848-852.	0.1	1
85	Anomalous scattering method in crystallography on the basis of parametric X-radiation. <i>Acta Crystallographica Section A: Foundations and Advances</i> , 2005, 61, 125-133.	0.3	1
86	<title>Simulation of the PXR and CBS spectra radiated by non-relativistic electrons in thin crystals</title>. , 2007, , .		1
87	Laser induced x-ray radiation under the grazing incidence geometry. <i>Journal of Physics: Conference Series</i> , 2010, 236, 012015.	0.4	1
88	High-resolution reciprocal space mapping of distributed Bragg reflectors and virtual substrates. <i>Physica Status Solidi (A) Applications and Materials Science</i> , 2011, 208, 2582-2586.	1.8	1
89	Parametric beam instability of the electron bunch in a crystal. , 2013, , .		1
90	Parametric gamma-radiation at the anomalous passage conditions. <i>Nuclear Instruments & Methods in Physics Research B</i> , 2014, 336, 31-36.	1.4	1

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91	A Uniformly Suitable Approximation for the Characteristics of the Electromagnetic Field in the Rabi Quantum Model. Journal of Applied Spectroscopy, 2020, 86, 1031-1038.	0.7	1
92	Relativistic effective charge model of a multi-electron atom. Journal of Physics B: Atomic, Molecular and Optical Physics, 0, , .	1.5	1
93	X-Ray Diffraction Residual Stress Analysis in Polycrystals. Springer Series in Materials Science, 2014, , 265-311.	0.6	1
94	OPERATOR METHOD FOR NONPERTURBATIVE DESCRIPTION OF QUANTUM SYSTEMS. , 2004, , .		1
95	Basics of the Operator Method. Lecture Notes in Physics, 2015, , 27-80.	0.7	1
96	Numerical solution of a non-linear self-consistent eigenvalue problem. USSR Computational Mathematics and Mathematical Physics, 1978, 18, 153-164.	0.0	0
97	Quantum analog of Lienard-Wichert potentials. Soviet Physics Journal (English Translation of Tj ETQq1 1 0.784314 rgBT /Overlock 10 T	0.6	0
98	Experimental observation of frequency tunable x-rays generated by interaction of nonrelativistic electrons with a silicon crystal. X-Ray Spectrometry, 2007, 36, 343-347.	1.4	0
99	Operator method for calculating the spectrum of states in the framework of the extended dicke model. Optics and Spectroscopy (English Translation of Optika I Spektroskopiya), 2007, 103, 291-299.	0.6	0
100	Applications of parametric X-rays for X-ray diffraction analysis. Nuclear Instruments & Methods in Physics Research B, 2008, 266, 3888-3892.	1.4	0
101	Resonant retuning of Rabi oscillations in a two-level system. Journal of Applied Spectroscopy, 2009, 76, 482-486.	0.7	0
102	Parametric x-ray radiation for the grazing incidence geometry. , 2010, , .		0
103	Theoretical investigation of scattering properties of crystal exposed to the XFEL femtosecond pulse. , 2013, , .		0
104	X-Ray Reflectivity. Springer Series in Materials Science, 2014, , 71-118.	0.6	0
105	Diffuse X-Ray Scattering from Imperfect Surfaces and Interfaces. Springer Series in Materials Science, 2014, , 171-216.	0.6	0
106	X-Ray Diffraction from Crystals with Defects. Springer Series in Materials Science, 2014, , 217-263.	0.6	0
107	Parametric gamma-radiation in Fe crystal with natural splitting of the Mössbauer line. Nuclear Instruments & Methods in Physics Research B, 2015, 355, 180-183.	1.4	0
108	Many-Electron Atoms. Lecture Notes in Physics, 2015, , 287-329.	0.7	0

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109	Quantum effects for particles channeling in a bent crystal. Nuclear Instruments & Methods in Physics Research B, 2016, 383, 109-114.	1.4	0
110	UNIFORMLY SUITABLE ESTIMATION FOR THERMODYNAMIC VALUES. , 2001, , 327-335.		0
111	Self-Localized Quasi-Particle Excitation in Quantum Electrodynamics and Its Physical Interpretation. Symmetry, Integrability and Geometry: Methods and Applications (SIGMA), 2007, , .	0.5	0
112	Collapse-revival Dynamics in Strongly Laser-driven Electrons. , 2013, , .		0
113	X-Ray Diffraction in Ideal Crystals. Springer Series in Materials Science, 2014, , 119-169.	0.6	0
114	The Theory of X-Ray Scattering from Macroscopical Objects. Springer Series in Materials Science, 2014, , 53-69.	0.6	0
115	Basic Principles of the Interaction of X-Rays with Matter: Quantum Electrodynamical Analysis. Springer Series in Materials Science, 2014, , 1-51.	0.6	0
116	Operator Method for Quantum Statistics. Lecture Notes in Physics, 2015, , 129-185.	0.7	0
117	Applications of OM for One-Dimensional Systems. Lecture Notes in Physics, 2015, , 81-128.	0.7	0
118	Systems with Infinite Number of Degrees of Freedom. Lecture Notes in Physics, 2015, , 331-358.	0.7	0
119	Two-Dimensional Exciton in Magnetic Field with Arbitrary Strength. Lecture Notes in Physics, 2015, , 215-249.	0.7	0
120	Method of the equivalent photons for modulated electron beam. Journal of the Belarusian State University Physics, 2020, , 24-31.	0.2	0