Igor Kostyukov

List of Publications by Year
in descending order

104 papers	2,877 citations	201385 27 h-index	174990 52 g-index
108 all docs	108 docs citations	108 times ranked	1315 citing authors

#	Article	IF	Citations
1	QED cascades induced by circularly polarized laser fields. Physical Review Special Topics: Accelerators and Beams, 2011, 14, .	1.8	261
2	Laser Field Absorption in Self-Generated Electron-Positron Pair Plasma. Physical Review Letters, 2011, 106, 035001.	2.9	253
3	Phenomenological theory of laser-plasma interaction in â€œbubbleâ€•regime. Physics of Plasmas, 2004, 11, 5256-5264.	0.7	250
4	Radiation-Reaction Trapping of Electrons in Extreme Laser Fields. Physical Review Letters, 2014, 112, 145003.	2.9	147
5	X-ray generation in an ion channel. Physics of Plasmas, 2003, 10, 4818-4828.	0.7	133
6	X-ray Generation in Strongly Nonlinear Plasma Waves. Physical Review Letters, 2004, 93, 135004.	2.9	129
7	Self-Compression of Laser Pulses in Plasma. Physical Review Letters, 2003, 91, 265002.	2.9	98
8	Electron Self-Injection in Multidimensional Relativistic-Plasma Wake Fields. Physical Review Letters, 2009, 103, 175003.	2.9	97
9	The bubble regime of laserâ€“plasma acceleration: monoenergetic electrons and the scalability. Plasma Physics and Controlled Fusion, 2004, 46, B179-B186.	0.9	85
10	Energy partition, Î³-ray emission, and radiation reaction in the near-quantum electrodynamical regime of laser-plasma interaction. Physics of Plasmas, 2014, 21, 023109.	0.7	76
11	Effect of laser polarization on quantum electrodynamical cascading. Physics of Plasmas, 2014, 21, 013105.	0.7	66
12	Optimized multibeam configuration for observation of QED cascades. Physical Review A, 2015, 92, .	1.0	65
13	EuPRAXIA Conceptual Design Report. European Physical Journal: Special Topics, 2020, 229, 3675-4284.	1.2	64
14	Demonstration of the ultrafast nature of laser produced betatron radiation. Physics of Plasmas, 2007, 14, 080701.	0.7	63
15	Horizon 2020 EuPRAXIA design study. Journal of Physics: Conference Series, 2017, 874, 012029.	0.3	60
16	Carrier-Envelope Phase Effects in Plasma-Based Electron Acceleration with Few-Cycle Laser Pulses. Physical Review Letters, 2009, 103, 035001.	2.9	57
17	Control of laser-wakefield acceleration by the plasma-density profile. Physical Review E, 2008, 77, 025401.	0.8	49
18	Gamma-ray generation in ultrahigh-intensity laser-foil interactions. Physics of Plasmas, 2014, 21, 013109.	0.7	42

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19	Probing non-perturbative QED with electron-laser collisions. Scientific Reports, 2019, 9, 9407.	1.6	39
20	Laser-driven hole boring and gamma-ray emission in high-density plasmas. Plasma Physics and Controlled Fusion, 2015, 57, 035007.	0.9	36
21	Production and dynamics of positrons in ultrahigh intensity laser-foil interactions. Physics of Plasmas, 2016, 23, .	0.7	34
22	Plasma-based methods for electron acceleration: current status and prospects. Physics-Uspekhi, 2015, 58, 81-88.	0.8	32
23	Magnetic-field generation and electron acceleration in relativistic laser channel. Physics of Plasmas, 2002, 9, 636-648.	0.7	31
24	Analytical model for electromagnetic cascades in rotating electric field. Physics of Plasmas, 2011, 18, .	0.7	30
25	Field-Reversed Bubble in Deep Plasma Channels for High-Quality Electron Acceleration. Physical Review Letters, 2014, 113, 245003.	2.9	30
26	Relativistic laser plasmas for electron acceleration and short wavelength radiation generation. Plasma Physics and Controlled Fusion, 2010, 52, 124039.	0.9	29
27	A multidimensional theory for electron trapping by a plasma wake generated in the bubble regime. New Journal of Physics, 2010, 12, 045009.	1.2	27
28	Collisional versus collisionless resonant and autoresonant heating in laser-cluster interaction. Physical Review E, 2003, 67, 066405.	0.8	25
29	Radiation emission by extreme relativistic electrons and pair production by hard photons in a strong plasma wakefield. Physical Review E, 2007, 75, 057401.	0.8	23
30	Magneto-inertial fusion with laser compression of a magnetized spherical target. Plasma Physics Reports, 2011, 37, 1092-1098.	0.3	23
31	Non-linear theory of a cavitated plasma wake in a plasma channel for special applications and control. Physics of Plasmas, 2016, 23, 053108.	0.7	22
32	Prospects of PEARL 10 and XCELS Laser Facilities. The Review of Laser Engineering, 2014, 42, 141.	0.0	22
33	Inverse-bremsstrahlung absorption of an intense laser field in cluster plasma. JETP Letters, 2001, 73, 393-397.	0.4	20
34	Fast electron generation using PW-class PEARL facility. Nuclear Instruments and Methods in Physics Research, Section A: Accelerators, Spectrometers, Detectors and Associated Equipment, 2011, 653, 35-41.	0.7	20
35	Laser-driven vacuum breakdown waves. Scientific Reports, 2019, 9, 11133.	1.6	19
36	Relativistic second-harmonic generation and conversion in a weakly magnetized plasma. Physics of Plasmas, 2000, 7, 1026-1034.	0.7	18

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37	Analytic model for electromagnetic fields in the bubble regime of plasma wakefield in non-uniform plasmas. Physics of Plasmas, 2017, 24, 103104.	0.7	17
38	Two-screen single-shot electron spectrometer for laser wakefield accelerated electron beams. Review of Scientific Instruments, 2011, 82, 043304.	0.6	15
39	Radiative damping in plasma-based accelerators. Physical Review Special Topics: Accelerators and Beams, 2012, 15, .	1.8	15
40	Influence of external inhomogeneous static fields on interaction between beam of charged particles and packet of electromagnetic waves. Physics of Plasmas, 1995, 2, 923-934.	0.7	14
41	Near QED regime of laser interaction with overdense plasmas. European Physical Journal: Special Topics, 2014, 223, 1069-1082.	1.2	14
42	Ionization-induced laser-driven QED cascade in noble gases. Physical Review A, 2017, 96, .	1.0	14
43	Field ionization in short and extremely intense laser pulses. Physical Review A, 2018, 98, .	1.0	13
44	Efficient gamma-ray source from solid-state microstructures irradiated by relativistic laser pulses. Plasma Physics and Controlled Fusion, 2019, 61, 074007.	0.9	13
45	Ultrahigh-Intensity Inverse-Bremsstrahlung Absorption. Physical Review Letters, 1999, 83, 2206-2209.	2.9	12
46	Incoherent synchrotron emission of laser-driven plasma edge. Physics of Plasmas, 2015, 22, .	0.7	12
47	Beam loading in the bubble regime in plasmas with hollow channels. Physics of Plasmas, 2016, 23, 093114.	0.7	12
48	Generalised model of a sheath of a plasma bubble excited by a short laser pulse or by a relativistic electron bunch in transversely inhomogeneous plasma. Quantum Electronics, 2016, 46, 295-298.	0.3	12
49	Weibel Instability in Hot Plasma Flows with the Production of Gamma-Rays and Electronâ€“Positron Pairs. Astrophysical Journal, 2017, 851, 129.	1.6	12
50	Near-surface electron acceleration during intense laserâ€“solid interaction in the grazing incidence regime. Physics of Plasmas, 2017, 24, 123115.	0.7	12
51	Kinetic modelling of quantum effects in laserâ€“beam interaction. Nuclear Instruments and Methods in Physics Research, Section A: Accelerators, Spectrometers, Detectors and Associated Equipment, 2011, 653, 7-10.	0.7	11
52	Asymptotic electron motion in the strongly-radiation-dominated regime. Physical Review A, 2018, 98, .	1.0	11
53	Status of the Horizon 2020 EuPRAXIA conceptual design study*. Journal of Physics: Conference Series, 2019, 1350, 012059.	0.3	11
54	Coherent acceleration by laser pulse echelons in periodic plasma structures. European Physical Journal: Special Topics, 2014, 223, 1197-1206.	1.2	9

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55	Hydrodynamical model of QED cascade expansion in an extremely strong laser pulse. Matter and Radiation at Extremes, 2021, 6, 034401.	1.5	9
56	Efficient Narrow-Band Terahertz Radiation from Electrostatic Wakefields in Nonuniform Plasmas. Physical Review Letters, 2021, 127, 175001.	2.9	9
57	Radiative losses in plasma accelerators. Journal of Experimental and Theoretical Physics, 2006, 103, 800-807.	0.2	8
58	Temporal and spatial expansion of a multi-dimensional model for electron acceleration in the bubble regime. Laser and Particle Beams, 2014, 32, 277-284.	0.4	8
59	Ultrahigh-intensity inverse bremsstrahlung. Physical Review E, 1999, 59, 1122-1135.	0.8	7
60	Inverse Faraday effect in a relativistic laser channel. Laser and Particle Beams, 2001, 19, 133-136.	0.4	7
61	EuPRAXIA â€“ a compact, cost-efficient particle and radiation source. AIP Conference Proceedings, 2019, , .	0.3	7
62	Stochastic heating and stochastic outer ionization of an atomic cluster in a laser field. Journal of Experimental and Theoretical Physics, 2005, 100, 903-910.	0.2	6
63	Experimental study of strongly mismatched regime of laser-driven wakefield acceleration. Plasma Physics and Controlled Fusion, 2020, 62, 094004.	0.9	6
64	Quasiclassical approach to synergic synchrotronâ€“Cherenkov radiation in polarized vacuum. New Journal of Physics, 2020, 22, 093072.	1.2	6
65	Stochastic heating in field-reversed low pressure discharges. Physics of Plasmas, 2000, 7, 185-192.	0.7	5
66	Relativistic laserâ€“plasma bubbles: new sources of energetic particles and x-rays. Nuclear Fusion, 2004, 44, S191-S201.	1.6	5
67	Bubble regime of plasma wakefield in 2D and 3D geometries. Physics of Plasmas, 2018, 25, 103107.	0.7	5
68	Global constant field approximation for radiation reaction in collision of high-intensity laser pulse with electron beam. Plasma Physics and Controlled Fusion, 2019, 61, 074003.	0.9	5
69	Using machine-learning methods for analysing the results of numerical simulation of laser-plasma acceleration of electrons. Quantum Electronics, 2021, 51, 854-860.	0.3	5
70	Radiation reactionâ€“dominated regime of wakefield acceleration. New Journal of Physics, 0, , .	1.2	5
71	Noninductive current profile broadening by electric and magnetic fluctuations. Physics of Plasmas, 1999, 6, 3233-3238.	0.7	4
72	Response to â€œComment on â€˜Phenomenological theory of laser-plasma interaction in â€œbubbleâ€• regime'â€‰â€• [Phys. Plasmas 17, 054703 (2010)]. Physics of Plasmas, 2010, 17, 054704.	0.7	4

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73	Beamstrahlung-enhanced disruption in beamâ€“beam interaction. New Journal of Physics, 2021, 23, 103040.	1.2	4
74	Positron acceleration via laser-augmented blowouts in two-column plasma structures. Physical Review E, 2022, 105, .	0.8	4
75	Cathode Sheath Instability at Frequencies Near the Ion Plasma Frequency. Radiophysics and Quantum Electronics, 2003, 46, 873-885.	0.1	3
76	Formation and dynamics of a plasma in superstrong laser fields including radiative and quantum electrodynamics effects. JETP Letters, 2016, 104, 883-891.	0.4	3
77	Excitation of strongly nonlinear plasma wakefield by electron bunches. Plasma Physics and Controlled Fusion, 2021, 63, 085004.	0.9	3
78	Effect of transverse displacement of charged particle beams on quantum electrodynamic processes during their collision. Quantum Electronics, 2021, 51, 807-811.	0.3	3
79	Fixing E-field divergence in strongly non-linear wakefields in homogeneous plasma. Plasma Physics and Controlled Fusion, 2020, 62, 115017.	0.9	3
80	Quasi-monoenergetic electron acceleration in relativistic laser-plasmas. Comptes Rendus Physique, 2009, 10, 159-166.	0.3	2
81	Superluminal phase velocity approach for suppression of Numerical Cherenkov Instability in Maxwell solver. Journal of Physics: Conference Series, 2020, 1692, 012002.	0.3	2
82	Formula for the ionisation rate of an atom or ion in a strong electromagnetic field for numerical simulation. Quantum Electronics, 2020, 50, 350-353.	0.3	2
83	Generation of IR radiation in the interaction of an ultrashort laser pulse with a gas jet. Quantum Electronics, 2021, 51, 850-853.	0.3	2
84	Effect of electronâ€“positron plasma production on the generation of a magnetic field in laser-plasma interactions. Quantum Electronics, 2021, 51, 861-865.	0.3	2
85	Influence of static fields and ponderomotive forces on the beam-plasma interaction. Physica Scripta, 1993, 47, 221-223.	1.2	1
86	On Landau damping in models of Langmuir turbulence. Physica D: Nonlinear Phenomena, 1995, 87, 295-300.	1.3	1
87	Features of Fundamental- and Subharmonics ECR Heating in a Magnetic Trap. Radiophysics and Quantum Electronics, 2002, 45, 795-805.	0.1	1
88	Perspectives of implementing QED cascade production with the next generation of laser facilities. Journal of Physics: Conference Series, 2015, 594, 012054.	0.3	1
89	Laser fields in dynamically ionized plasma structures for coherent acceleration. European Physical Journal: Special Topics, 2015, 224, 2625-2629.	1.2	1
90	Generation of electron â€“ positron pairs by laser-ion implosion of a target with a spherical microbubble inside. Quantum Electronics, 2021, 51, 795-800.	0.3	1

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91	Piecewise acceleration of electrons across a periodic solid-state structure irradiated by intense laser pulse. Plasma Physics and Controlled Fusion, 2020, 62, 104002.	0.9	1
92	Kinetic modeling of wakefield generation in ultrahigh intensity laser-plasma interaction. Journal of Physics: Conference Series, 2007, 63, 012016.	0.3	0
93	Transformation of a nonlinear plasma wave into electromagnetic radiation in a periodic magnetic field. Radiophysics and Quantum Electronics, 2007, 50, 452-463.	0.1	0
94	Hamiltonian model for plasma electron trapping and acceleration in multidimensional plasma wake field. , 2010, , .		0
95	QED effects and radiation generation in relativistic laser plasma. Proceedings of SPIE, 2011, , .	0.8	0
96	Analytical model for QED cascade development in rotating superstrong electric field. , 2011, , .		0
97	Piecewise-homogeneous model for electron side injection into linear plasma waves. Nuclear Instruments and Methods in Physics Research, Section A: Accelerators, Spectrometers, Detectors and Associated Equipment, 2016, 829, 392-396.	0.7	0
98	Bubble regime in deep plasma channels. AIP Conference Proceedings, 2017, , .	0.3	0
99	Specific features of betatron oscillations and betatron emission in a hollow-channel plasma. Quantum Electronics, 2017, 47, 188-193.	0.3	0
100	Delta-layer model for the boundary of a bubble excited by an electron bunch or laser pulse in a plasma channel. Quantum Electronics, 2017, 47, 228-231.	0.3	0
101	Laser wake field acceleration in bubble regime: quasi-monoenergetic electron bunches and flashes of synchrotron radiation. , 2003, , .		0
102	Relativistic Laser Plasmas for Electron Acceleration and Short Wavelength Radiation Generation. Springer Series in Chemical Physics, 2011, , 191-223.	0.2	0
103	Some Relations from Hamiltonian Mechanics and their Applications to Plasma Physics. , 1999, , 449-452.		0
104	Reconstruction of electron spectrum after magnetic spectrometer with weak magnet. Nuclear Instruments and Methods in Physics Research, Section A: Accelerators, Spectrometers, Detectors and Associated Equipment, 2022, 1025, 166097.	0.7	0