Egor Babaev

List of Publications by Citations

106 papers	2,982 citations	28 h-index	52 g-index
115 ext. papers	3,440 ext. citations	4.5 avg, IF	5.77 L-index

#	Paper	IF	Citations
106	A superconductor to superfluid phase transition in liquid metallic hydrogen. *Nature*, **2004**, 431, 666-8	50.4	254
105	Vortices with fractional flux in two-gap superconductors and in extended faddeev model. *Physical Review Letters*, **2002**, 89, 067001	7.4	246
104	Hidden symmetry and knot solitons in a charged two-condensate Bose system. *Physical Review B*, **2002**, 65,	3.3	203
103	Semi-Meissner state and neither type-I nor type-II superconductivity in multicomponent superconductors. *Physical Review B*, **2005**, 72,	3.3	169
102	Microscopic derivation of two-component Ginzburg-Landau model and conditions of its applicability in two-band systems. *Physical Review B*, **2012**, 85,	3.3	100
101	Dual neutral variables and knot solitons in triplet superconductors. *Physical Review Letters*, **2002**, 88, 177002	7.4	98
100	Microscopic theory of type-1.5 superconductivity in multiband systems. *Physical Review B*, **2011**, 84,	3.3	92
99	Type-1.5 superconducting state from an intrinsic proximity effect in two-band superconductors. *Physical Review Letters*, **2010**, 105, 067003	7.4	83
98	Topological solitons in three-band superconductors with broken time reversal symmetry. *Physical Review Letters*, **2011**, 107, 197001	7.4	79
97	Type-1.5 superconductivity in multiband systems: Effects of interband couplings. *Physical Review B*, **2011**, 83,	3.3	77
96	Nonperturbative XY-model approach to strong coupling superconductivity in two and three dimensions. *Physical Review B*, **1999**, 59, 12083-12089	3.3	75
95	Field- and temperature-induced topological phase transitions in the three-dimensional N-component London superconductor. *Physical Review B*, **2005**, 71,	3.3	71
94	Phase diagram of planar U(1)×U(1) superconductor. *Nuclear Physics B*, **2004**, 686, 397-412	2.8	69
93	Length scales, collective modes, and type-1.5 regimes in three-band superconductors. *Physical Review B*, **2011**, 84,	3.3	66
92	Chiral CP2 skyrmions in three-band superconductors. *Physical Review B*, **2013**, 87,	3.3	62
91	Violation of the London law and Onsager–Feynman quantization in multicomponent superconductors. *Nature Physics*, **2007**, 3, 530-533	16.2	52
90	Domain walls and their experimental signatures in s+is superconductors. *Physical Review Letters*, **2014**, 112, 017003	7.4	47

89	Magnetic field delocalization and flux inversion in fractional vortices in two-component superconductors. *Physical Review Letters*, **2009**, 103, 237002	7.4	47
88	Vortex sublattice melting in a two-component superconductor. *Physical Review Letters*, **2005**, 94, 096401	7.4	47
87	Observability of a projected new state of matter: a metallic superfluid. *Physical Review Letters*, **2005**, 95, 105301	7.4	47
86	Skyrmionic state and stable half-quantum vortices in chiral p-wave superconductors. *Physical Review B*, **2012**, 86,	3.3	40
85	NONLINEAR SIGMA MODEL APPROACH FOR PHASE DISORDER TRANSITIONS IN CHIRAL GROSSNEVEU, NAMBUJONA-LASINIO MODELS AND STRONG-COUPLING SUPERCONDUCTORS. *International Journal of Modern Physics A*, **2001**, 16, 1175-1197	1.2	39
84	Non-Meissner electrodynamics and knotted solitons in two-component superconductors. *Physical Review B*, **2009**, 79,	3.3	36
83	Semi-Meissner state and nonpairwise intervortex interactions in type-1.5 superconductors. *Physical Review B*, **2011**, 84,	3.3	34
82	Mass generation without symmetry breakdown in the chiral GrossNeveu model at finite temperature and finite N in 2+1 dimensions. *Physics Letters, Section B: Nuclear, Elementary Particle and High-Energy Physics*, **2001**, 497, 323-327	4.2	31
81	Spin-Orbit Protection of Induced Superconductivity in Majorana Nanowires. *Physical Review Letters*, **2019**, 122, 187702	7.4	30
80	Phase transitions in a three dimensional U(1)U(1) lattice London superconductor: Metallic superfluid and charge-4e superconducting states. *Physical Review B*, **2010**, 82,	3.3	29
79	Andreev-Bashkin effect and knot solitons in an interacting mixture of a charged and a neutral superfluid with possible relevance for neutron stars. *Physical Review D*, **2004**, 70,	4.9	28
78	Microscopic prediction of skyrmion lattice state in clean interface superconductors. *Physical Review B*, **2014**, 90,	3.3	27
77	Unconventional rotational responses of hadronic superfluids in a neutron star caused by strong entrainment and a Sigma- hyperon gap. *Physical Review Letters*, **2009**, 103, 231101	7.4	27
76	Nematic Skyrmions in Odd-Parity Superconductors. *Physical Review Letters*, **2017**, 119, 167001	7.4	26
75	Vortex coalescence and type-1.5 superconductivity in Sr2RuO4. *Physical Review B*, **2012**, 86,	3.3	25
74	Type-1.5 superconductivity in multiband systems: Magnetic response, broken symmetries and microscopic theory A brief overview. *Physica C: Superconductivity and Its Applications*, **2012**, 479, 2-14	1.3	25
73	Properties of skyrmions and multi-quanta vortices in chiral p-wave superconductors. *Scientific Reports*, **2015**, 5, 17540	4.9	24
72	Comment on Ginzburg-Landau theory of two-band superconductors: Absence of type-1.5 superconductivity*Physical Review B*, **2012**, 86,	3.3	24

71	Thermoelectric Signatures of Time-Reversal Symmetry Breaking States in Multiband Superconductors. *Physical Review Letters*, **2016**, 116, 097002	7.4	23
70	Time reversal symmetry breakdown in normal and superconducting states in frustrated three-band systems. *Physical Review B*, **2013**, 88,	3.3	23
69	Type-1.5 superconductivity in multicomponent systems. *Physica C: Superconductivity and Its Applications*, **2017**, 533, 20-35	1.3	22
68	Nonlinear sigma model approach for chiral fluctuations and symmetry breakdown in the Nambu□ona-Lasinio model. *Physical Review D*, **2000**, 62,	4.9	22
67	Observation of a metallic superfluid in a numerical experiment. *Physical Review Letters*, **2005**, 95, 135301	7.4	20
66	Unusual states of vortex matter in mixtures of Bose-Einstein condensates on rotating optical lattices. *Physical Review Letters*, **2008**, 101, 255301	7.4	19
65	Phase transitions and anomalous normal state in superconductors with broken time-reversal symmetry. *Physical Review B*, **2014**, 89,	3.3	17
64	Hierarchical structure formation in layered superconducting systems with multi-scale inter-vortex interactions. *Journal of Physics Condensed Matter*, **2013**, 25, 415702	1.8	17
63	Unusual mechanism of vortex viscosity generated by mixed normal modes in superconductors with broken time reversal symmetry. *Physical Review B*, **2013**, 88,	3.3	16
62	Unconventional thermoelectric effect in superconductors that break time-reversal symmetry. *Physical Review B*, **2015**, 92,	3.3	15
61	Skyrmions induced by dissipationless drag in U(1)□U(1) superconductors. *Physical Review B*, **2014**, 89,	3.3	15
60	Fractional-flux vortices and spin superfluidity in triplet superconductors. *Physical Review Letters*, **2005**, 94, 137001	7.4	15
59	Thermodynamics of the crossover from weak- to strong-coupling superconductivity. *Physical Review B*, **2001**, 63,	3.3	15
58	Classification of ground states and normal modes for phase-frustrated multicomponent superconductors. *Physical Review B*, **2013**, 88,	3.3	14
57	Glass Transitions in Monodisperse Cluster-Forming Ensembles: Vortex Matter in Type-1.5 Superconductors. *Physical Review Letters*, **2017**, 118, 067001	7.4	13
56	Honeycomb, square, and kagome vortex lattices in superconducting systems with multiscale intervortex interactions. *Physical Review B*, **2014**, 90,	3.3	13
55	Phase structure and phase transitions in a three-dimensional SU(2) superconductor. *Physical Review B*, **2013**, 87,	3.3	13
54	Microscopically derived multi-component Ginzburg□andau theories fors+issuperconducting state. *Physica C: Superconductivity and Its Applications*, **2017**, 533, 63-73	1.3	12

53	Properties of dirty two-band superconductors with repulsive interband interaction: Normal modes, length scales, vortices, and magnetic response. *Physical Review B*, **2018**, 98,	3.3	11
52	Thermal fluctuations of vortex matter in trapped bose-einstein condensates. *Physical Review Letters*, **2006**, 97, 170403	7.4	11
51	Surface Pair-Density-Wave Superconducting and Superfluid States. *Physical Review Letters*, **2019**, 122, 165302	7.4	10
50	Superfluid drag in the two-component Bose-Hubbard model. *Physical Review B*, **2018**, 97,	3.3	10
49	Lattices of double-quanta vortices and chirality inversion in px+ipy superconductors. *Physical Review B*, **2016**, 94,	3.3	10
48	Thermal remixing of phase-separated states in two-component bosonic condensates. *New Journal of Physics*, **2015**, 17, 103040	2.9	10
47	Type-1.5 superconductivity in two-band systems. *Physica C: Superconductivity and Its Applications*, **2010**, 470, 717-721	1.3	10
46	Vortex chains due to nonpairwise interactions and field-induced phase transitions between states with different broken symmetry in superconductors with competing order parameters. *Physical Review B*, **2015**, 91,	3.3	9
45	Spontaneous breakdown of time-reversal symmetry induced by thermal fluctuations. *Physical Review B*, **2015**, 91,	3.3	8
44	Vortex matter, effective magnetic charges, and generalizations of the dipolar superfluidity concept in layered systems. *Physical Review B*, **2008**, 77,	3.3	8
43	Boundary states with elevated critical temperatures in Bardeen-Cooper-Schrieffer superconductors. *Physical Review B*, **2020**, 101,	3.3	8
42	Phase diagram of dirty two-band superconductors and observability of impurity-induced s+is state. *Physical Review B*, **2017**, 95,	3.3	7
41	Phase-change switching in 2D via soft interactions. *Soft Matter*, **2019**, 15, 355-358	3.6	7
40	Non-London electrodynamics in a multiband London model: Anisotropy-induced nonlocalities and multiple magnetic field penetration lengths. *Physical Review B*, **2018**, 97,	3.3	7
39	Screening properties and phase transitions in unconventional plasmas for Ising-type quantum Hall states. *Physical Review B*, **2012**, 85,	3.3	7
38	Pair-density-wave superconductivity of faces, edges, and vertices in systems with imbalanced fermions. *Physical Review B*, **2020**, 101,	3.3	6
37	First-order phase transition and tricritical point in multiband U(1) London superconductors. *Physical Review B*, **2016**, 93,	3.3	6
36	Topological defects in mixtures of superconducting condensates with different charges. *Physical Review B*, **2014**, 89,	3.3	6

35	Fluctuation effects in rotating Bose-Einstein condensates with broken SU(2) and U(1)□U(1) symmetries in the presence of intercomponent density-density interactions. *Physical Review A*, **2015**, 91,	2.6	6
34	Phase diagrams of vortex matter with multi-scale inter-vortex interactions in layered superconductors. *Journal of Physics Condensed Matter*, **2017**, 29, 035602	1.8	5
33	Melting of a two-dimensional monodisperse cluster crystal to a cluster liquid. *Physical Review E*, **2019**, 99, 042140	2.4	5
32	Synthetic nuclear Skyrme matter in imbalanced Fermi superfluids with a multicomponent order parameter. *Physical Review A*, **2020**, 101,	2.6	5
31	Antichiral and nematicity-wave superconductivity. *Physical Review B*, **2019**, 99,	3.3	5
30	Stripe, gossamer, and glassy phases in systems with strong nonpairwise interactions. *Physical Review E*, **2013**, 88, 042305	2.4	5
29	Vortex matter in U(1)□U(1)□2 phase-separated superconducting condensates. *Physical Review B*, **2014**, 90,	3.3	5
28	Rotational response of superconductors: Magnetorotational isomorphism and rotation-induced vortex lattice. *Physical Review B*, **2014**, 89,	3.3	5
27	Freezing of an unconventional two-dimensional plasma. *Physical Review B*, **2013**, 87,	3.3	5
26	Vortex nucleation barrier in superconductors beyond the Bean-Livingston approximation: A numerical approach for the sphaleron problem in a gauge theory. *Physical Review B*, **2020**, 101,	3.3	5
25	Ring dark solitons in three-dimensional Bose-Einstein condensates. *Physical Review A*, **2019**, 100,	2.6	5
24	Change of the vortex core structure in two-band superconductors at the impurity-scattering-driven s□/s++ crossover. *Physical Review B*, **2017**, 96,	3.3	4
23	Stable Hopf-Skyrme topological excitations in the superconducting state. *Physical Review B*, **2019**, 100,	3.3	4
22	Fluctuation-induced first-order phase transitions in type-1.5 superconductors in zero external field. *Physical Review B*, **2015**, 91,	3.3	4
21	State with spontaneously broken time-reversal symmetry above the superconducting phase transition. *Nature Physics*,	16.2	4
20	Hierarchies of length-scale based typology in anisotropic U(1)s-wave multiband superconductors. *Physical Review B*, **2019**, 99,	3.3	4
19	Field-induced coexistence of s++ and s□ superconducting states in dirty multiband superconductors. *Physical Review B*, **2018**, 97,	3.3	2
18	Entropy- and flow-induced superfluid states. *Physical Review Letters*, **2014**, 113, 055301	7.4	2

17	Characteristic length scales and formation of vortices in the Ginzburg-Landau-Higgs model in the presence of a uniform background charge. *Physical Review B*, **2001**, 63,	3.3	2
16	Spiral magnetic field and bound states of vortices in noncentrosymmetric superconductors. *Physical Review B*, **2020**, 102,	3.3	2
15	Skyrmion formation due to unconventional magnetic modes in anisotropic multiband superconductors. *Physical Review B*, **2019**, 99,	3.3	2
14	Composite order in SU(N) theories coupled to an Abelian gauge field. *Physical Review B*, **2021**, 104,	3.3	2
13	Dissipationless Vector Drag-Superfluid Spin Hall Effect. *Physical Review Letters*, **2021**, 127, 100403	7.4	2
12	Incommensurateness effects in a lattice Ginzburg-Landau model. *Physics of the Solid State*, **1997**, 39, 1024-1027	0.8	1
11	Ring solitons and soliton sacks in imbalanced fermionic systems. *Physical Review Research*, **2020**, 2,	3.9	1
10	Pinning effects in a two-dimensional cluster glass. *Physical Review B*, **2021**, 104,	3.3	1
9	Microscopic derivation of superconductor-insulator boundary conditions for Ginzburg-Landau theory revisited: Enhanced superconductivity at boundaries with and without magnetic field. *Physical Review B*, **2021**, 103,	3.3	1
8	Antichiral ferromagnetism. *Physical Review B*, **2021**, 104,	3.3	1
7	Chiral p-wave superconductors have complex coherence and magnetic field penetration lengths. *Physical Review B*, **2019**, 100,	3.3	1
6	Borromean Supercounterfluidity.. *Physical Review Letters*, **2021**, 127, 255303	7.4	1
5	Cluster self-assembly condition for arbitrary interaction potentials. *Soft Matter*, **2021**, 17, 915-923	3.6	0
4	Unusual resistive states of multiband superconductors in the effective field theory approach. *Europhysics Letters*, **2020**, 130, 17001	1.6	
3	Vortices carrying an arbitrary fraction of magnetic flux quantum, neutral superfluidity and knotted solitons in two-gap Ginzburg–Landau model. *Physica C: Superconductivity and Its Applications*, **2004**, 404, 39-43	1.3	
2	The absence of superconductivity in the next-to-leading order Ginzburg–Landau functional for Bardeen–Cooper–Schrieffer superconductor. *Journal of Mathematical Physics*, **2021**, 62, 121901	1.2	
1	Barkman et al. Reply. *Physical Review Letters*, **2021**, 126, 179603	7.4	