

# Eduardo H Fradkin

## List of Publications by Year in descending order

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206  
papers

17,033  
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15504

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211  
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211  
docs citations

211  
times ranked

7742  
citing authors

#	ARTICLE	IF	CITATIONS
1	How to detect fluctuating stripes in the high-temperature superconductors. <i>Reviews of Modern Physics</i> , 2003, 75, 1201-1241.	45.6	1,194
2	<i>Colloquium</i>: Theory of intertwined orders in high temperature superconductors. <i>Reviews of Modern Physics</i> , 2015, 87, 457-482.	45.6	737
3	Phase diagrams of lattice gauge theories with Higgs fields. <i>Physical Review D</i> , 1979, 19, 3682-3697.	4.7	722
4	Nematic Fermi Fluids in Condensed Matter Physics. <i>Annual Review of Condensed Matter Physics</i> , 2010, 1, 153-178.	14.5	561
5	Fractional quantum Hall effect and Chern-Simons gauge theories. <i>Physical Review B</i> , 1991, 44, 5246-5262.	3.2	529
6	Quantum theory of a nematic Fermi fluid. <i>Physical Review B</i> , 2001, 64, .	3.2	391
7	Order and disorder in gauge systems and magnets. <i>Physical Review D</i> , 1978, 17, 2637-2658.	4.7	384
8	Topological Insulators and Nematic Phases from Spontaneous Symmetry Breaking in 2D Fermi Systems with a Quadratic Band Crossing. <i>Physical Review Letters</i> , 2009, 103, 046811.	7.8	356
9	Critical behavior of disordered degenerate semiconductors. II. Spectrum and transport properties in mean-field theory. <i>Physical Review B</i> , 1986, 33, 3263-3268.	3.2	334
10	Liquid-crystal phases of quantum Hall systems. <i>Physical Review B</i> , 1999, 59, 8065-8072.	3.2	317
11	Signatures of exciton condensation in a transition metal dichalcogenide. <i>Science</i> , 2017, 358, 1314-1317.	12.6	307
12	Topological order and conformal quantum critical points. <i>Annals of Physics</i> , 2004, 310, 493-551.	2.8	264
13	Short-ranged resonating valence bond physics, quantum dimer models, and Ising gauge theories. <i>Physical Review B</i> , 2001, 65, .	3.2	262
14	Phase diagram of one-dimensional electron-phonon systems. I. The Su-Schrieffer-Heeger model. <i>Physical Review B</i> , 1983, 27, 1680-1697.	3.2	249
15	Striped superconductors: how spin, charge and superconducting orders intertwine in the cuprates. <i>New Journal of Physics</i> , 2009, 11, 115004.	2.9	244
16	Phase transitions in gapless Fermi systems with magnetic impurities. <i>Physical Review Letters</i> , 1990, 64, 1835-1838.	7.8	243
17	Jordan-Wigner transformation for quantum-spin systems in two dimensions and fractional statistics. <i>Physical Review Letters</i> , 1989, 63, 322-325.	7.8	218
18	Entanglement Entropy of 2D Conformal Quantum Critical Points: Hearing the Shape of a Quantum Drum. <i>Physical Review Letters</i> , 2006, 97, 050404.	7.8	217

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19	A Chern-Simons effective field theory for the Pfaffian quantum Hall state. Nuclear Physics B, 1998, 516, 704-718.	2.5	212
20	Phase diagram of one-dimensional electron-phonon systems. II. The molecular-crystal model. Physical Review B, 1983, 27, 4302-4316.	3.2	211
21	The Physics of Pair-Density Waves: Cuprate Superconductors and Beyond. Annual Review of Condensed Matter Physics, 2020, 11, 231-270.	14.5	209
22	Critical behavior of disordered degenerate semiconductors. I. Models, symmetries, and formalism. Physical Review B, 1986, 33, 3257-3262.	3.2	199
23	Disorder variables and para-fermions in two-dimensional statistical mechanics. Nuclear Physics B, 1980, 170, 1-15.	2.5	193
24	Charge-4e superconductivity from pair-density-wave order in certain high-temperature superconductors. Nature Physics, 2009, 5, 830-833.	16.7	186
25	Gauge symmetries in random magnetic systems. Physical Review B, 1978, 18, 4789-4814.	3.2	177
26	Topological terms in one- and two-dimensional quantum Heisenberg antiferromagnets. Physical Review B, 1988, 38, 7215-7218.	3.2	168
27	The fermion-boson mapping in three-dimensional quantum field theory. Physics Letters, Section B: Nuclear, Elementary Particle and High-Energy Physics, 1994, 338, 253-258.	4.1	165
28	Bipartite Rokhsar-Kivelson points and Cantor deconfinement. Physical Review B, 2004, 69, .	3.2	161
29	Topological entanglement entropy in Chern-Simons theories and quantum Hall fluids. Journal of High Energy Physics, 2008, 2008, 016-016.	4.7	154
30	SU(2) gauge invariance and order parameters in strongly coupled electronic systems. Physical Review B, 1988, 38, 2926-2929.	3.2	127
31	Out-of-time-order correlations in many-body localized and thermal phases. Annalen Der Physik, 2017, 529, 1600332.	2.4	126
32	Theory of the striped superconductor. Physical Review B, 2009, 79, .	3.2	123
33	Physical Realization of the Parity Anomaly in Condensed Matter Physics. Physical Review Letters, 1986, 57, 2967-2970.	7.8	121
34	SHORT RANGE RESONATING VALENCE BOND THEORIES AND SUPERCONDUCTIVITY. Modern Physics Letters B, 1990, 04, 225-232.	1.9	120
35	Response functions and spectrum of collective excitations of fractional-quantum-Hall-effect systems. Physical Review B, 1993, 47, 7080-7094.	3.2	118
36	The Effective Fine-Structure Constant of Freestanding Graphene Measured in Graphite. Science, 2010, 330, 805-808.	12.6	118

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37	Nematic Phase of the Two-Dimensional Electron Gas in a Magnetic Field. Physical Review Letters, 2000, 84, 1982-1985.	7.8	116
38	Distinguishing patterns of charge order: Stripes or checkerboards. Physical Review B, 2006, 74, .	3.2	111
39	Torsional Response and Dissipationless Viscosity in Topological Insulators. Physical Review Letters, 2011, 107, 075502.	7.8	111
40	Effect of Quantum Fluctuations on the Peierls Instability: A Monte Carlo Study. Physical Review Letters, 1982, 49, 402-405.	7.8	109
41	Distinct universal conductances in tunneling to quantum Hall states: The role of contacts. Physical Review B, 1997, 56, 2012-2025.	3.2	105
42	Exact calculation of multifractal exponents of the critical wave function of Dirac fermions in a random magnetic field. Physical Review B, 1997, 56, 10668-10677.	3.2	102
43	Bosonization of the low energy excitations of Fermi liquids. Physical Review Letters, 1994, 72, 1393-1397.	7.8	101
44	Framing Anomaly in the Effective Theory of the Fractional Quantum Hall Effect. Physical Review Letters, 2015, 114, 016805.	7.8	101
45	Fermi liquid instabilities in the spin channel. Physical Review B, 2007, 75, .	3.2	100
46	Ineluctable complexity. Nature Physics, 2012, 8, 864-866.	16.7	100
47	Bosonization of Fermi liquids. Physical Review B, 1994, 49, 10877-10892.	3.2	97
48	Universal entanglement entropy in two-dimensional conformal quantum critical points. Physical Review B, 2009, 79, .	3.2	97
49	Nonperturbative behavior of the quantum phase transition to a nematic Fermi fluid. Physical Review B, 2006, 73, .	3.2	94
50	Discrete sliding symmetries, dualities, and self-dualities of quantum orbital compass models and p+ip superconducting arrays. Physical Review B, 2005, 71, .	3.2	92
51	Theory of twist liquids: Gauging an anyonic symmetry. Annals of Physics, 2015, 360, 349-445.	2.8	87
52	Theory of the nodal nematic quantum phase transition in superconductors. Physical Review B, 2008, 77, .	3.2	81
53	Separation of spin and charge quantum numbers in strongly correlated systems. Physical Review B, 1994, 49, 5200-5219.	3.2	78
54	Signatures of Fractional Statistics in Noise Experiments in Quantum Hall Fluids. Physical Review Letters, 2005, 95, 176402.	7.8	78



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73	Superfluidity of the lattice anyon gas and topological invariance. Physical Review B, 1990, 42, 570-586.	3.2	60
74	Mapping the Magnetostructural Quantum Phases of $Mn_3O_4$ . Physical Review Letters, 2010, 104, 136402.	7.8	57
75	Localization in a magnetic field: Tight binding model with one-half of a flux quantum per plaquette. Nuclear Physics B, 1985, 251, 457-471.	2.5	56
76	Exact solution of the Landau fixed point via bosonization. Physical Review B, 1995, 51, 4084-4104.	3.2	56
77	Ice: A strongly correlated proton system. Physical Review B, 2006, 74, .	3.2	56
78	Fermion representation for the $Z_2$ lattice gauge theory in 2+1 dimensions. Physical Review D, 1980, 21, 2885-2891.	4.7	55
79	Theory of Nematic Fractional Quantum Hall States. Physical Review X, 2014, 4, .	8.9	55
80	Overscreening of magnetic impurities in $d=2$ $y_2$ -wave superconductors. Physical Review B, 1997, 56, 11246-11261.	3.2	53
81	Pair-density-wave superconducting order in two-leg ladders. Physical Review B, 2012, 85, .	3.2	53
82	Bosonization of three-dimensional non-abelian fermion field theories. Nuclear Physics B, 1995, 446, 144-156.	2.5	50
83	Local quantum criticality at the nematic quantum phase transition. Physical Review B, 2007, 75, .	3.2	48
84	Quantum noise and entanglement generated by a local quantum quench. Physical Review B, 2009, 80, .	3.2	48
85	Measurement of the dynamic charge response of materials using low-energy, momentum-resolved electron energy-loss spectroscopy (M-EELS). SciPost Physics, 2017, 3, .	4.9	48
86	Chern-Simons gauge theories, confinement, and the chiral spin liquid. Physical Review Letters, 1991, 66, 276-279.	7.8	47
87	The thermodynamics of quantum systems and generalizations of Zamolodchikov's C-theorem. Nuclear Physics B, 1993, 400, 525-546.	2.5	47
88	Effective field theories for topological insulators by functional bosonization. Physical Review B, 2013, 87, .	3.2	46
89	Mechanism of spin and charge separation in one-dimensional quantum antiferromagnets. Physical Review B, 1994, 50, 11409-11428.	3.2	45
90	Macroscopically Degenerate Exactly Solvable Point in the Spin-1 Kagome Quantum Antiferromagnet. Physical Review Letters, 2018, 120, 117202.	7.8	45

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91	Superconducting-normal phase boundary of quasicrystalline arrays in a magnetic field. Physical Review B, 1987, 36, 8338-8342.	3.2	44
92	Topological superconducting phases from inversion symmetry breaking order in spin-orbit-coupled systems. Physical Review B, 2016, 93, .	3.2	44
93	Pair density waves in superconducting vortex halos. Physical Review B, 2018, 97, .	3.2	41
94	Andreev reflection in the fractional quantum Hall effect. Physical Review B, 1998, 57, 12324-12332.	3.2	40
95	Universality of Liquid-Gas Mott Transitions at Finite Temperatures. Physical Review Letters, 2008, 100, 026408.	7.8	40
96	Fluctuating stripes in strongly correlated electron systems and the nematic-smectic quantum phase transition. Physical Review B, 2008, 78, .	3.2	38
97	Roughening transition in quantum interfaces. Physical Review B, 1983, 28, 5338-5341.	3.2	37
98	Theory of the quantum Hall Smectic Phase. I. Low-energy properties of the quantum Hall smectic fixed point. Physical Review B, 2002, 65, .	3.2	37
99	Chern-Simons theory of magnetization plateaus of the spin- $\frac{1}{2}$ XXZ Heisenberg model on the kagome lattice. Physical Review B, 2014, 90, .	3.2	36
100	Quasi-one-dimensional dynamics and nematic phases in the two-dimensional Emery model. Physical Review B, 2004, 69, .	3.2	36
101	Topological phases and topological entropy of two-dimensional systems with finite correlation length. Physical Review B, 2007, 76, .	3.2	36
102	Chiral spin liquids on the kagome lattice. Physical Review B, 2015, 92, .	3.2	36
103	Vestigial nematicity from spin and/or charge order in the cuprates. Physical Review B, 2017, 96, .	3.2	36
104	N-Color Ashkin-Teller Model in Two Dimensions: Solution in the Large-N Limit. Physical Review Letters, 1984, 53, 1967-1970.	7.8	34
105	Pair-density-wave superconducting states and electronic liquid-crystal phases. Physical Review B, 2014, 89, .	3.2	34
106	Electron Nematic Phases Proliferate. Science, 2010, 327, 155-156.	12.6	33
107	Quasiparticle interference and strong electron-phonon mode coupling in the quasi-one-dimensional bands of Sr <sub>2</sub> RuO <sub>4</sub> . Nature Physics, 2017, 13, 799-805.	16.7	33
108	Real-space renormalization-group scheme for spin and gauge systems. Physical Review D, 1979, 20, 2566-2582.	4.7	31

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109	Chern-Simons theory of the anisotropic quantum Heisenberg antiferromagnet on a square lattice. <i>Physical Review B</i> , 1994, 49, 15139-15158.	3.2	30
110	Fermion Chern-Simons theory of hierarchical fractional quantum Hall states. <i>Physical Review B</i> , 2004, 69, .	3.2	30
111	Measuring fractional charge and statistics in fractional quantum Hall fluids through noise experiments. <i>Physical Review B</i> , 2006, 74, .	3.2	29
112	Scaling of entanglement entropy at 2D quantum Lifshitz fixed points and topological fluids. <i>Journal of Physics A: Mathematical and Theoretical</i> , 2009, 42, 504011.	2.1	28
113	Non-commutative Chern-Simons for the quantum Hall system and duality. <i>Nuclear Physics B</i> , 2002, 642, 483-500.	2.5	27
114	Composite particle theory of three-dimensional gapped fermionic phases: Fractional topological insulators and charge-loop excitation symmetry. <i>Physical Review B</i> , 2016, 94, .	3.2	27
115	Nematic quantum phase transition of composite Fermi liquids in half-filled Landau levels and their geometric response. <i>Physical Review B</i> , 2016, 93, .	3.2	27
116	Electron Nematic Phase in a Transition Metal Oxide. <i>Science</i> , 2007, 315, 196-197.	12.6	26
117	Noise measurements and fractional charge in fractional quantum Hall liquids. <i>Physical Review B</i> , 1999, 59, 12521-12536.	3.2	25
118	Interedge tunneling in quantum Hall line junctions. <i>Physical Review B</i> , 2003, 67, .	3.2	25
119	Disorder Operators and Their Descendants. <i>Journal of Statistical Physics</i> , 2017, 167, 427-461.	1.2	25
120	Superconductivity and Localization in the Presence of Strong Spin-Orbit Scattering. <i>Physical Review Letters</i> , 1986, 56, 1416-1418.	7.8	24
121	Fractional S-duality, classification of fractional topological insulators, and surface topological order. <i>Physical Review B</i> , 2017, 96, .	3.2	24
122	Singlet quantum Hall effect and Chern-Simons theories. <i>Physical Review B</i> , 1991, 43, 10622-10634.	3.2	23
123	Quantum spin chains with multiple dynamics. <i>Physical Review B</i> , 2017, 96, .	3.2	23
124	Role of nematic fluctuations in the thermal melting of pair-density-wave phases in two-dimensional superconductors. <i>Physical Review B</i> , 2011, 83, .	3.2	22
125	Rényi entropy and the multifractal spectra of systems near the localization transition. <i>Physical Review B</i> , 2012, 86, .	3.2	22
126	Dirac composite fermions and emergent reflection symmetry about even-denominator filling fractions. <i>Physical Review B</i> , 2018, 98, .	3.2	22





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145	Cooper-Pair Tunneling in Junctions of Singlet Quantum Hall States and Superconductors. <i>Physical Review Letters</i> , 2004, 93, 266803.	7.8	17
146	Quantum Hall smectics, sliding symmetry, and the renormalization group. <i>Physical Review B</i> , 2004, 70, .	3.2	17
147	INTERMEDIATE SYMMETRIES IN ELECTRONIC SYSTEMS: DIMENSIONAL REDUCTION, ORDER OUT OF DISORDER, DUALITIES, AND FRACTIONALIZATION. <i>International Journal of Modern Physics B</i> , 2006, 20, 5239-5249.	2.0	17
148	Helical spin thermoelectrics controlled by a side-coupled magnetic quantum dot in the quantum spin Hall state. <i>Physical Review B</i> , 2018, 98, .	3.2	17
149	Periodic, incommensurate and chaotic states in a continuum statistical mechanics model. <i>Nuclear Physics B</i> , 1983, 215, 137-168.	2.5	16
150	Local Density of States of One-Dimensional Mott Insulators and Charge-Density Wave States with a Boundary. <i>Physical Review Letters</i> , 2008, 101, 086403.	7.8	16
151	Entanglement entropy and mutual information of circular entangling surfaces in the 2+1-dimensional quantum Lifshitz model. <i>Journal of Statistical Mechanics: Theory and Experiment</i> , 2016, 2016, 093101.	2.3	15
152	Fluctuation diamagnetism in high-temperature superconductors. <i>Physics Magazine</i> , 0, 3, .	0.1	14
153	Boundary effects on the local density of states of one-dimensional Mott insulators and charge density wave states. <i>Physical Review B</i> , 2011, 83, .	3.2	14
154	Topological Pair-Density-Wave Superconducting States. <i>Physical Review Letters</i> , 2014, 113, 256405.	7.8	14
155	Chern-Simons composite fermion theory of fractional Chern insulators. <i>Physical Review B</i> , 2018, 97, .	3.2	14
156	Bosonization of the Kondo problem. <i>Nuclear Physics B</i> , 1989, 316, 710-734.	2.5	13
157	Double Point Contact in Quantum Hall Line Junctions. <i>Physical Review Letters</i> , 2003, 91, 156801.	7.8	13
158	Generic character of charge and spin density waves in superconducting cuprates. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , 2022, 119, e2119429119.	7.1	13
159	Bosonization rules in dimensions. <i>Nuclear Physics B</i> , 1995, 450, 603-640.	2.5	12
160	Chiral heat transport in driven quantum Hall and quantum spin Hall edge states. <i>Physical Review B</i> , 2011, 84, .	3.2	12
161	Heat transport through quantum Hall edge states: Tunneling versus capacitive coupling to reservoirs. <i>Physical Review B</i> , 2013, 88, .	3.2	12
162	Higgs modes in the pair density wave superconducting state. <i>Physical Review B</i> , 2017, 95, .	3.2	12

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163	Landau-Ginzburg theories of non-Abelian quantum Hall states from non-Abelian bosonization. Physical Review B, 2019, 100, .	3.2	12
164	Complete bosonization of two-dimensional QCD in the path-integral framework. Physical Review D, 1987, 36, 3809-3812.	4.7	11
165	Reexamination of the effective fine structure constant of graphene as measured in graphite. Physical Review B, 2016, 93, .	3.2	11
166	Dynamical stability of the quantum Lifshitz theory in 2+1 dimensions. Physical Review B, 2013, 87, .	3.2	10
167	Quasi-one-dimensional pair density wave superconducting state. Physical Review B, 2015, 91, .	3.2	10
168	Numerical evidence for a chiral spin liquid in the XXZ antiferromagnetic Heisenberg model on the kagome lattice at $\nu = 1/3$ . Physical Review B, 2016, 94, .	3.2	10
169	Conformal properties of the Kondo models. Nuclear Physics B, 1990, 340, 692-702.	2.5	9
170	Antiferromagnetic Spin Ladders Effectively Coupled by One-Dimensional Electron Liquids. Physical Review Letters, 2001, 86, 1865-1868.	7.8	9
171	Pair-Density-Wave Order and Paired Fractional Quantum Hall Fluids. Physical Review X, 2019, 9, .	8.9	9
172	Localization and interactions in a disordered electron gas. Physical Review B, 1983, 28, 2990-3006.	3.2	8
173	Magnetization of the Coqblin-Schrieffer model in the large-N limit at nonzero field. Physical Review B, 1986, 34, 8172-8175.	3.2	8
174	Intertwined order in fractional Chern insulators from finite-momentum pairing of composite fermions. Physical Review B, 2020, 101, .	3.2	7
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181	Boson-fermion duality in a gravitational background. <i>Annals of Physics</i> , 2018, 399, 1-25.	2.8	6
182	Bosonization of Fermi liquids in a weak magnetic field. <i>Physical Review B</i> , 2018, 98, .	3.2	6
183	Gauge-invariant spin glasses. <i>Physical Review B</i> , 1986, 34, 301-305.	3.2	5
184	Fractional Statistics and Duality: Strong Tunneling Behavior of Edge States of Quantum Hall Liquids in the Jain Sequence. <i>Physical Review Letters</i> , 2007, 98, .	7.8	5
185	Non-Abelian fermionization and the landscape of quantum Hall phases. <i>Physical Review B</i> , 2020, 102, .	3.2	5
186	Constrained Fermi systems and Virasoro algebras. <i>Physics Letters, Section B: Nuclear, Elementary Particle and High-Energy Physics</i> , 1988, 200, 95-97.	4.1	4
187	Equivalence of the path-integral theory of spinning particles and the topological nonlinear $\sigma$ model in 2 dimensions. <i>Physical Review D</i> , 1992, 45, 595-604.	4.7	4
188	Scrambling in the quantum Lifshitz model. <i>Journal of Statistical Mechanics: Theory and Experiment</i> , 2018, 2018, 063102.	2.3	4
189	Superconductivity's cousin. <i>Nature</i> , 1997, 387, 18-19.	27.8	3
190	FERMIONIC CHERN-SIMONS FIELD THEORY FOR THE FRACTIONAL HALL EFFECT. , 1998, , 195-253.		3
191	Bosonization of fermions coupled to topologically massive gravity. <i>Physics Letters, Section B: Nuclear, Elementary Particle and High-Energy Physics</i> , 2014, 730, 284-287.	4.1	3
192	Topology and the one-dimensional Kondo-Heisenberg model. <i>Physical Review B</i> , 2020, 101, .	3.2	3
193	The parity anomaly in condensed matter physics. <i>Nuclear Physics, Section B, Proceedings Supplements</i> , 1987, 1, 175-183.	0.4	2
194	Exact effective action for fermions in one dimension with backscattering at a boundary. <i>Physical Review B</i> , 1996, 53, 16568-16572.	3.2	2
195	Fractional quantum Hall junctions and two-channel Kondo models. <i>Physical Review B</i> , 2001, 63, .	3.2	2
196	The electron many-body problem in graphene. <i>Physica Scripta</i> , 2012, T146, 014014.	2.5	2
197	Composite particle construction of the Fibonacci fractional quantum Hall state. <i>Physical Review B</i> , 2021, 103, .	3.2	2
198	Universality in the Fractional Quantum Hall effect. <i>Nuclear Physics, Section B, Proceedings Supplements</i> , 1993, 33, 67-91.	0.4	1

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199	Bilayers of chiral spin states. <i>Physical Review B</i> , 1996, 53, 8708-8725.	3.2	1
200	Publisher's Note: Fermion Chern-Simons theory of hierarchical fractional quantum Hall states [Phys. Rev. B69, 155322 (2004)]. <i>Physical Review B</i> , 2004, 69, .	3.2	1
201	Magnetic Field and Pressure Induced Quantum Phases in Complex Materials. <i>Advanced Materials</i> , 2010, 22, 1148-1155.	21.0	1
202	Instanton effects in lattice models of bosonic symmetry-protected topological states. <i>Physical Review B</i> , 2016, 93, .	3.2	1
203	Effective field theory of an anomalous Hall metal from interband quantum fluctuations. <i>Physical Review B</i> , 2017, 96, .	3.2	1
204	Universality in the Fractional Quantum Hall. , 1995, , .		0
205	Interacting electrons on a half line coupled to impurities. <i>Nuclear Physics B</i> , 1997, 501, 745-772.	2.5	0
206	INTERMEDIATE SYMMETRIES IN ELECTRONIC SYSTEMS: DIMENSIONAL REDUCTION, ORDER OUT OF DISORDER, DUALITIES, AND FRACTIONALIZATION. , 2006, , .		0