

Wang Yao

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151
papers

31,775
citations

65
h-index

167
g-index

167
ext. papers

38,490
ext. citations

13.2
avg, IF

7.42
L-index

#	Paper	IF	Citations
151	Coupled spin and valley physics in monolayers of MoS2 and other group-VI dichalcogenides. <i>Physical Review Letters</i> , 2012 , 108, 196802	7.4	2994
150	Valley polarization in MoS2 monolayers by optical pumping. <i>Nature Nanotechnology</i> , 2012 , 7, 490-3	28.7	2497
149	Layer-dependent ferromagnetism in a van der Waals crystal down to the monolayer limit. <i>Nature</i> , 2017 , 546, 270-273	50.4	2210
148	Spin and pseudospins in layered transition metal dichalcogenides. <i>Nature Physics</i> , 2014 , 10, 343-350	16.2	1733
147	Valley-contrasting physics in graphene: magnetic moment and topological transport. <i>Physical Review Letters</i> , 2007 , 99, 236809	7.4	1273
146	Electrically tunable excitonic light-emitting diodes based on monolayer WSe2 p-n junctions. <i>Nature Nanotechnology</i> , 2014 , 9, 268-72	28.7	1202
145	Valleytronics in 2D materials. <i>Nature Reviews Materials</i> , 2016 , 1,	73.3	1045
144	Electrical control of neutral and charged excitons in a monolayer semiconductor. <i>Nature Communications</i> , 2013 , 4, 1474	17.4	1007
143	Optical generation of excitonic valley coherence in monolayer WSe2. <i>Nature Nanotechnology</i> , 2013 , 8, 634-8	28.7	1001
142	Observation of long-lived interlayer excitons in monolayer MoSe2-WSe2 heterostructures. <i>Nature Communications</i> , 2015 , 6, 6242	17.4	896
141	Lateral heterojunctions within monolayer MoSe2-WSe2 semiconductors. <i>Nature Materials</i> , 2014 , 13, 1096-101	17.4	732
140	Optical signature of symmetry variations and spin-valley coupling in atomically thin tungsten dichalcogenides. <i>Scientific Reports</i> , 2013 , 3, 1608	4.9	659
139	Electrical control of 2D magnetism in bilayer CrI. <i>Nature Nanotechnology</i> , 2018 , 13, 544-548	28.7	626
138	Valley-dependent optoelectronics from inversion symmetry breaking. <i>Physical Review B</i> , 2008 , 77,	3.3	615
137	Single quantum emitters in monolayer semiconductors. <i>Nature Nanotechnology</i> , 2015 , 10, 497-502	28.7	556
136	Giant tunneling magnetoresistance in spin-filter van der Waals heterostructures. <i>Science</i> , 2018 , 360, 1214-1218	33.3	555
135	Monolayer semiconductor nanocavity lasers with ultralow thresholds. <i>Nature</i> , 2015 , 520, 69-72	50.4	545

134	Magnetic control of valley pseudospin in monolayer WSe ₂ . <i>Nature Physics</i> , 2015 , 11, 148-152	16.2	529
133	Three-band tight-binding model for monolayers of group-VIB transition metal dichalcogenides. <i>Physical Review B</i> , 2013 , 88,	3.3	526
132	Two-dimensional itinerant ferromagnetism in atomically thin FeGeTe. <i>Nature Materials</i> , 2018 , 17, 778-782	7	522
131	Signatures of moiré-trapped valley excitons in MoSe ₂ /WSe ₂ heterobilayers. <i>Nature</i> , 2019 , 567, 66-70	50.4	486
130	Valley-polarized exciton dynamics in a 2D semiconductor heterostructure. <i>Science</i> , 2016 , 351, 688-91	33.3	451
129	Electrical tuning of valley magnetic moment through symmetry control in bilayer MoS ₂ . <i>Nature Physics</i> , 2013 , 9, 149-153	16.2	451
128	Massive Dirac fermions and spin physics in an ultrathin film of topological insulator. <i>Physical Review B</i> , 2010 , 81,	3.3	427
127	Van der Waals engineering of ferromagnetic semiconductor heterostructures for spin and valleytronics. <i>Science Advances</i> , 2017 , 3, e1603113	14.3	419
126	Electronic structures and theoretical modelling of two-dimensional group-VIB transition metal dichalcogenides. <i>Chemical Society Reviews</i> , 2015 , 44, 2643-63	58.5	398
125	Ultrafast hot-carrier-dominated photocurrent in graphene. <i>Nature Nanotechnology</i> , 2012 , 7, 114-8	28.7	312
124	Electrical control of second-harmonic generation in a WSe ₂ monolayer transistor. <i>Nature Nanotechnology</i> , 2015 , 10, 407-11	28.7	300
123	Edge states in graphene: from gapped flat-band to gapless chiral modes. <i>Physical Review Letters</i> , 2009 , 102, 096801	7.4	253
122	Moiré excitons: From programmable quantum emitter arrays to spin-orbit-coupled artificial lattices. <i>Science Advances</i> , 2017 , 3, e1701696	14.3	247
121	Magnetoelectric effects and valley-controlled spin quantum gates in transition metal dichalcogenide bilayers. <i>Nature Communications</i> , 2013 , 4, 2053	17.4	246
120	Spin-layer locking effects in optical orientation of exciton spin in bilayer WSe ₂ . <i>Nature Physics</i> , 2014 , 10, 130-134	16.2	243
119	Theory of electron spin decoherence by interacting nuclear spins in a quantum dot. <i>Physical Review B</i> , 2006 , 74,	3.3	236
118	Gate-tunable topological valley transport in bilayer graphene. <i>Nature Physics</i> , 2015 , 11, 1027-1031	16.2	226
117	Interlayer valley excitons in heterobilayers of transition metal dichalcogenides. <i>Nature Nanotechnology</i> , 2018 , 13, 1004-1015	28.7	218

116	Dirac cones and Dirac saddle points of bright excitons in monolayer transition metal dichalcogenides. <i>Nature Communications</i> , 2014 , 5, 3876	17.4	196
115	Interlayer Exciton Optoelectronics in a 2D Heterostructure p-n Junction. <i>Nano Letters</i> , 2017 , 17, 638-643	11.5	193
114	Ligand-field helical luminescence in a 2D ferromagnetic insulator. <i>Nature Physics</i> , 2018 , 14, 277-281	16.2	192
113	Valley excitons in two-dimensional semiconductors. <i>National Science Review</i> , 2015 , 2, 57-70	10.8	188
112	Optically controlled locking of the nuclear field via coherent dark-state spectroscopy. <i>Nature</i> , 2009 , 459, 1105-9	50.4	181
111	Giant nonreciprocal second-harmonic generation from antiferromagnetic bilayer CrI. <i>Nature</i> , 2019 , 572, 497-501	50.4	172
110	Intrinsic spin Hall effect in monolayers of group-VI dichalcogenides: A first-principles study. <i>Physical Review B</i> , 2012 , 86,	3.3	165
109	Valley Manipulation by Optically Tuning the Magnetic Proximity Effect in WSe/CrI Heterostructures. <i>Nano Letters</i> , 2018 , 18, 3823-3828	11.5	159
108	Anomalous Light Cones and Valley Optical Selection Rules of Interlayer Excitons in Twisted Heterobilayers. <i>Physical Review Letters</i> , 2015 , 115, 187002	7.4	142
107	Theory of control of the spin-photon interface for quantum networks. <i>Physical Review Letters</i> , 2005 , 95, 030504	7.4	142
106	Excitonic luminescence upconversion in a two-dimensional semiconductor. <i>Nature Physics</i> , 2016 , 12, 323-327	13.7	135
105	Dense network of one-dimensional midgap metallic modes in monolayer MoSe ₂ and their spatial undulations. <i>Physical Review Letters</i> , 2014 , 113, 066105	7.4	135
104	Topological mosaics in moiré superlattices of van der Waals heterobilayers. <i>Nature Physics</i> , 2017 , 13, 356-362	16.2	131
103	Restoring coherence lost to a slow interacting mesoscopic spin bath. <i>Physical Review Letters</i> , 2007 , 98, 077602	7.4	129
102	Control of two-dimensional excitonic light emission via photonic crystal. <i>2D Materials</i> , 2014 , 1, 011001	5.9	124
101	Atomically Thin CrCl: An In-Plane Layered Antiferromagnetic Insulator. <i>Nano Letters</i> , 2019 , 19, 3993-3998	11.5	120
100	Intervalley scattering and localization behaviors of spin-valley coupled Dirac fermions. <i>Physical Review Letters</i> , 2013 , 110, 016806	7.4	112
99	Visualizing band offsets and edge states in bilayer-monolayer transition metal dichalcogenides lateral heterojunction. <i>Nature Communications</i> , 2016 , 6, 10349	17.4	99

98	Quantum-enhanced tunable second-order optical nonlinearity in bilayer graphene. <i>Nano Letters</i> , 2012 , 12, 2032-6	11.5	96
97	Single Defect Light-Emitting Diode in a van der Waals Heterostructure. <i>Nano Letters</i> , 2016 , 16, 3944-8	11.5	95
96	Magnetic control of the valley degree of freedom of massive Dirac fermions with application to transition metal dichalcogenides. <i>Physical Review B</i> , 2013 , 88,	3.3	87
95	Interlayer coupling in commensurate and incommensurate bilayer structures of transition-metal dichalcogenides. <i>Physical Review B</i> , 2017 , 95,	3.3	84
94	Quantum computing by optical control of electron spins. <i>Advances in Physics</i> , 2010 , 59, 703-802	18.4	84
93	Control of electron spin decoherence caused by electron-nuclear spin dynamics in a quantum dot. <i>New Journal of Physics</i> , 2007 , 9, 226-226	2.9	84
92	Voltage Control of a van der Waals Spin-Filter Magnetic Tunnel Junction. <i>Nano Letters</i> , 2019 , 19, 915-920	11.5	80
91	Directional interlayer spin-valley transfer in two-dimensional heterostructures. <i>Nature Communications</i> , 2016 , 7, 13747	17.4	80
90	Skyrmions in the Moiré of van der Waals 2D Magnets. <i>Nano Letters</i> , 2018 , 18, 7194-7199	11.5	80
89	Excitons in strain-induced one-dimensional moiré potentials at transition metal dichalcogenide heterojunctions. <i>Nature Materials</i> , 2020 , 19, 1068-1073	27	79
88	Berry Phase Modification to the Energy Spectrum of Excitons. <i>Physical Review Letters</i> , 2015 , 115, 166803	7.4	71
87	Layer-resolved magnetic proximity effect in van der Waals heterostructures. <i>Nature Nanotechnology</i> , 2020 , 15, 187-191	28.7	66
86	Single-electron spin decoherence by nuclear spin bath: Linked-cluster expansion approach. <i>Physical Review B</i> , 2007 , 75,	3.3	65
85	Nonlinear valley and spin currents from Fermi pocket anisotropy in 2D crystals. <i>Physical Review Letters</i> , 2014 , 113, 156603	7.4	64
84	Unusual Exciton-Phonon Interactions at van der Waals Engineered Interfaces. <i>Nano Letters</i> , 2017 , 17, 1194-1199	11.5	63
83	Brightened spin-triplet interlayer excitons and optical selection rules in van der Waals heterobilayers. <i>2D Materials</i> , 2018 , 5, 035021	5.9	61
82	Valley-splitting and valley-dependent inter-Landau-level optical transitions in monolayer MoS2 quantum Hall systems. <i>Physical Review B</i> , 2014 , 90,	3.3	60
81	Valley phonons and exciton complexes in a monolayer semiconductor. <i>Nature Communications</i> , 2020 , 11, 618	17.4	55

80	Spin-orbit-coupled quantum wires and Majorana fermions on zigzag edges of monolayer transition-metal dichalcogenides. <i>Physical Review B</i> , 2014 , 89,	3.3	54
79	Quantum size effects on the work function of metallic thin film nanostructures. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , 2010 , 107, 12761-5	11.5	54
78	Observation of intervalley quantum interference in epitaxial monolayer tungsten diselenide. <i>Nature Communications</i> , 2015 , 6, 8180	17.4	49
77	Intervalley coupling by quantum dot confinement potentials in monolayer transition metal dichalcogenides. <i>New Journal of Physics</i> , 2014 , 16, 105011	2.9	49
76	Optical control of topological quantum transport in semiconductors. <i>Physical Review Letters</i> , 2007 , 99, 047401	7.4	48
75	Spin-valley qubit in nanostructures of monolayer semiconductors: Optical control and hyperfine interaction. <i>Physical Review B</i> , 2016 , 93,	3.3	44
74	Berry phase effect on the exciton transport and on the exciton Bose-Einstein condensate. <i>Physical Review Letters</i> , 2008 , 101, 106401	7.4	44
73	Stacking symmetry governed second harmonic generation in graphene trilayers. <i>Science Advances</i> , 2018 , 4, eaat0074	14.3	42
72	Phonon-assisted oscillatory exciton dynamics in monolayer MoSe ₂ . <i>Npj 2D Materials and Applications</i> , 2017 , 1,	8.8	37
71	Deep moiré potentials in twisted transition metal dichalcogenide bilayers. <i>Nature Physics</i> , 2021 , 17, 720-726.2		37
70	Cross-dimensional electron-phonon coupling in van der Waals heterostructures. <i>Nature Communications</i> , 2019 , 10, 2419	17.4	35
69	Tailoring excitonic states of van der Waals bilayers through stacking configuration, band alignment, and valley spin. <i>Science Advances</i> , 2019 , 5, eaax7407	14.3	31
68	Many-body effects in nonlinear optical responses of 2D layered semiconductors. <i>2D Materials</i> , 2017 , 4, 025024	5.9	28
67	Engineering Point-Defect States in Monolayer WSe. <i>ACS Nano</i> , 2019 , 13, 1595-1602	16.7	28
66	Nanodot-cavity electrostatics and photon entanglement. <i>Physical Review Letters</i> , 2004 , 92, 217402	7.4	28
65	Excitons and emergent quantum phenomena in stacked 2D semiconductors. <i>Nature</i> , 2021 , 599, 383-392	50.4	24
64	Coherent control of cavity quantum electrostatics for quantum nondemolition measurements and ultrafast cooling. <i>Physical Review B</i> , 2005 , 72,	3.3	21
63	Population pulsation resonances of excitons in monolayer MoSe ₂ with sub-1 eV linewidths. <i>Physical Review Letters</i> , 2015 , 114, 137402	7.4	20

62	Highly anisotropic excitons and multiple phonon bound states in a van der Waals antiferromagnetic insulator. <i>Nature Nanotechnology</i> , 2021 , 16, 655-660	28.7	18
61	Magnetic Proximity Effect in a van der Waals Moiré Superlattice. <i>Physical Review Applied</i> , 2019 , 12,	4.3	17
60	Interface excitons at lateral heterojunctions in monolayer semiconductors. <i>Physical Review B</i> , 2018 , 98,	3.3	16
59	Optical selection rules for excitonic Rydberg series in the massive Dirac cones of hexagonal two-dimensional materials. <i>Physical Review B</i> , 2017 , 95,	3.3	15
58	Giant magnetic field from moiré-induced Berry phase in homobilayer semiconductors.. <i>National Science Review</i> , 2020 , 7, 12-20	10.8	15
57	Realization of Valley and Spin Pumps by Scattering at Nonmagnetic Disorders. <i>Physical Review Letters</i> , 2017 , 118, 096602	7.4	14
56	Linearly Polarized Luminescence of Atomically Thin MoS Semiconductor Nanocrystals. <i>ACS Nano</i> , 2019 , 13, 13006-13014	16.7	14
55	Moiré Trions in MoSe/WSe heterobilayers. <i>Nature Nanotechnology</i> , 2021 , 16, 1208-1213	28.7	13
54	Theoretical Design of Topological Heteronanotubes. <i>Nano Letters</i> , 2019 , 19, 4146-4150	11.5	12
53	Fault-tolerant almost exact state transmission. <i>Scientific Reports</i> , 2013 , 3, 3128	4.9	12
52	Many-body singlets by dynamic spin polarization. <i>Physical Review B</i> , 2011 , 83,	3.3	11
51	Moiré Valleytronics: Realizing Dense Arrays of Topological Helical Channels. <i>Physical Review Letters</i> , 2018 , 121, 186403	7.4	11
50	Gate tuning from exciton superfluid to quantum anomalous Hall in van der Waals heterobilayer. <i>Science Advances</i> , 2019 , 5, eaau6120	14.3	10
49	Valleytronics: Magnetization without polarization. <i>Nature Materials</i> , 2017 , 16, 876-877	27	10
48	Spin relaxation in charged quantum dots measured by coherent optical phase modulation spectroscopy. <i>Solid State Communications</i> , 2006 , 140, 381-385	1.6	10
47	Enhancement of the Kerr effect for a quantum dot in a cavity. <i>Superlattices and Microstructures</i> , 2003 , 34, 213-217	2.8	10
46	Theory of control of the dynamics of the interface between stationary and flying qubits. <i>Journal of Optics B: Quantum and Semiclassical Optics</i> , 2005 , 7, S318-S325		10
45	Theory of tunable flux lattices in the homobilayer moiré twisted and uniformly strained transition metal dichalcogenides. <i>Physical Review Materials</i> , 2020 , 4,	3.2	10

44	Coupling of photonic crystal cavity and interlayer exciton in heterobilayer of transition metal dichalcogenides. <i>2D Materials</i> , 2020 , 7, 015027	5.9	10
43	Room-Temperature Valley Polarization in Atomically Thin Semiconductors Chalcogenide Alloying. <i>ACS Nano</i> , 2020 , 14, 9873-9883	16.7	10
42	Symmetry-Controlled Electron-Phonon Interactions in van der Waals Heterostructures. <i>ACS Nano</i> , 2019 , 13, 552-559	16.7	10
41	Intrinsic donor-bound excitons in ultraclean monolayer semiconductors. <i>Nature Communications</i> , 2021 , 12, 871	17.4	10
40	Generating coherent states of entangled spins. <i>Physical Review A</i> , 2011 , 84,	2.6	7
39	Deterministic preparation of Dicke states of donor nuclear spins in silicon by cooperative pumping. <i>Physical Review B</i> , 2012 , 85,	3.3	7
38	Feedback control of nuclear hyperfine fields in a double quantum dot. <i>Europhysics Letters</i> , 2010 , 92, 170008	0.8	7
37	Interferences of electrostatic moiré potentials and bichromatic superlattices of electrons and excitons in transition metal dichalcogenides. <i>2D Materials</i> , 2021 , 8, 025007	5.9	7
36	Electrically tunable topological transport of moiré polaritons. <i>Science Bulletin</i> , 2020 , 65, 1555-1562	10.6	6
35	Phonon-exciton Interactions in WSe under a quantizing magnetic field. <i>Nature Communications</i> , 2020 , 11, 3104	17.4	6
34	Optically manipulating spins in semiconductor quantum dots. <i>Journal of Applied Physics</i> , 2007 , 101, 081721	2.5	6
33	Observation of Quantized Exciton Energies in Monolayer WSe ₂ under a Strong Magnetic Field. <i>Physical Review X</i> , 2020 , 10,	9.1	5
32	Entanglement detection and quantum metrology by Raman photon-diffraction imaging. <i>Physical Review A</i> , 2013 , 87,	2.6	5
31	Protecting dissipative quantum state preparation via dynamical decoupling. <i>Physical Review A</i> , 2013 , 87,	2.6	5
30	Non-adiabatic Hall effect at Berry curvature hot spot. <i>2D Materials</i> , 2020 , 7, 045004	5.9	5
29	Light-induced ferromagnetism in moiré superlattices. <i>Nature</i> , 2022 , 604, 468-473	50.4	5
28	Switchable valley functionalities of an n-p-n junction in 2D crystals. <i>2D Materials</i> , 2017 , 4, 025109	5.9	4
27	Stimulated Raman spin coherence and spin-flip induced hole burning in charged GaAs quantum dots. <i>Physical Review B</i> , 2008 , 77,	3.3	4

26	Probing the exciton k-space dynamics in monolayer tungsten diselenides. <i>2D Materials</i> , 2019 , 6, 025035	5.9	3
25	Nonlinear optics in the electron-hole continuum in 2D semiconductors: two-photon transition, second harmonic generation and valley current injection. <i>Science Bulletin</i> , 2019 , 64, 1036-1043	10.6	3
24	Feedback control of nuclear spin bath of a single hole spin in a quantum dot. <i>Physical Review B</i> , 2015 , 91,	3.3	3
23	Theory of wave-packet transport under narrow gaps and spatial textures: Nonadiabaticity and semiclassicality. <i>Physical Review B</i> , 2020 , 102,	3.3	3
22	Universal superlattice potential for 2D materials from twisted interface inside h-BN substrate. <i>Npj 2D Materials and Applications</i> , 2021 , 5,	8.8	3
21	Multifunctional antiferromagnetic materials with giant piezomagnetism and noncollinear spin current. <i>Nature Communications</i> , 2021 , 12, 2846	17.4	3
20	Monolayer Semiconductor Auger Detector. <i>Nano Letters</i> , 2020 , 20, 5538-5543	11.5	2
19	Persistent optical nuclear spin narrowing in a singly charged InAs quantum dot. <i>Journal of the Optical Society of America B: Optical Physics</i> , 2012 , 29, A119	1.7	2
18	Layer Pseudospin Dynamics and Genuine Non-Abelian Berry Phase in Inhomogeneously Strained Moiré Pattern. <i>Physical Review Letters</i> , 2020 , 125, 266404	7.4	2
17	Twist versus heterostrain control of optical properties of moiré exciton minibands. <i>2D Materials</i> , 2021 , 8, 044016	5.9	2
16	Valley-Selective Klein Tunneling through a Superlattice Barrier in Graphene. <i>Physical Review Applied</i> , 2020 , 14,	4.3	2
15	Luminescence Anomaly of Dipolar Valley Excitons in Homobilayer Semiconductor Moiré Superlattices. <i>Physical Review X</i> , 2021 , 11,	9.1	2
14	Coulomb effects on topological band inversion in the moiré WSe ₂ /BAs heterobilayer. <i>2D Materials</i> , 2019 , 6, 045037	5.9	1
13	Optical Properties of TMD Heterostructures	310-328	1
12	The Nuclear Dark State under Dynamical Nuclear Polarization. <i>Chinese Physics Letters</i> , 2013 , 30, 077302	1.8	1
11	Optical generation of valley polarization in atomically thin semiconductors	2013 ,	1
10	Edge state in AB-stacked bilayer graphene and its correspondence with the Su-Schrieffer-Heeger ladder. <i>Physical Review B</i> , 2021 , 104,	3.3	1
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- 8 Spin photovoltaic effect in magnetic van der Waals heterostructures. *Science Advances*, **2021**, 7, eabg8094. 4.3 ○
- 7 Giant Spin Transfer Torque in Atomically Thin Magnetic Bilayers. *Chinese Physics Letters*, **2020**, 37, 1072018. 1.8 ○
- 6 Moiré excitons at line defects in transition metal dichalcogenides heterobilayers. *Comptes Rendus Physique*, 1-16. 1.4 ○
- 5 Valley-Spin Physics in 2D Semiconducting Transition Metal Dichalcogenides. 279-294
- 4 CONTROL OF ELECTRON SPIN DECOHERENCE IN MESOSCOPIC NUCLEAR SPIN BATHS. *International Journal of Modern Physics B*, **2008**, 22, 27-32. 1.1
- 3 Valley excitons: From monolayer semiconductors to moiré superlattices. *Semiconductors and Semimetals*, **2020**, 105, 269-303. 0.6
- 2 Nanometrology of field gradient using donor spins in silicon. *Journal of Physics Condensed Matter*, **2018**, 30, 425301. 1.8
- 1 Revealing the non-adiabatic and non-Abelian multiple-band effects via anisotropic valley Hall conduction in bilayer graphene. *2D Materials*, **2021**, 8, 045012. 5.9