

# Stephen Hughes

## List of Publications by Year in descending order

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115  
papers

5,130  
citations

94433

37  
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91884

69  
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116  
all docs

116  
docs citations

116  
times ranked

3133  
citing authors

#	ARTICLE	IF	CITATIONS
1	Extrinsic Optical Scattering Loss in Photonic Crystal Waveguides: Role of Fabrication Disorder and Photon Group Velocity. <i>Physical Review Letters</i> , 2005, 94, 033903.	7.8	373
2	Disorder-induced scattering loss of line-defect waveguides in photonic crystal slabs. <i>Physical Review B</i> , 2005, 72, .	3.2	233
3	Breakdown of the Area Theorem: Carrier-Wave Rabi Flopping of Femtosecond Optical Pulses. <i>Physical Review Letters</i> , 1998, 81, 3363-3366.	7.8	217
4	Modes and Mode Volumes of Leaky Optical Cavities and Plasmonic Nanoresonators. <i>ACS Photonics</i> , 2014, 1, 2-10.	6.6	217
5	Single quantum-dot Purcell factor and $\tilde{Q}$ factor in a photonic crystal waveguide. <i>Physical Review B</i> , 2007, 75, .	3.2	208
6	Generalized effective mode volume for leaky optical cavities. <i>Optics Letters</i> , 2012, 37, 1649.	3.3	179
7	Polarization Engineering in Photonic Crystal Waveguides for Spin-Photon Entanglers. <i>Physical Review Letters</i> , 2015, 115, 153901.	7.8	148
8	Spontaneous emission spectra and quantum light-matter interactions from a strongly coupled quantum dot metal-nanoparticle system. <i>Physical Review B</i> , 2012, 85, .	3.2	145
9	Phonon-Dressed Mollow Triplet in the Regime of Cavity Quantum Electrodynamics: Excitation-Induced Dephasing and Nonperturbative Cavity Feeding Effects. <i>Physical Review Letters</i> , 2011, 106, 247403.	7.8	141
10	Detuning-dependent Mollow triplet of a coherently-driven single quantum dot. <i>Optics Express</i> , 2013, 21, 4382.	3.4	132
11	Quantization of Quasinormal Modes for Open Cavities and Plasmonic Cavity Quantum Electrodynamics. <i>Physical Review Letters</i> , 2019, 122, 213901.	7.8	130
12	On-chip single photon sources using planar photonic crystals and single quantum dots. <i>Laser and Photonics Reviews</i> , 2010, 4, 499-516.	8.7	129
13	Disorder-Induced Coherent Scattering in Slow-Light Photonic Crystal Waveguides. <i>Physical Review Letters</i> , 2009, 102, 253903.	7.8	127
14	Single Quantum Dot Spontaneous Emission in a Finite-Size Photonic Crystal Waveguide: Proposal for an Efficient "On Chip" Single Photon Gun. <i>Physical Review Letters</i> , 2007, 99, 193901.	7.8	124
15	Ultrahigh Purcell factors and Lamb shifts in slow-light metamaterial waveguides. <i>Physical Review B</i> , 2009, 80, .	3.2	101
16	Enhanced single-photon emission from quantum dots in photonic crystal waveguides and nanocavities. <i>Optics Letters</i> , 2004, 29, 2659.	3.3	98
17	Normalization of quasinormal modes in leaky optical cavities and plasmonic resonators. <i>Physical Review A</i> , 2015, 92, .	2.5	98
18	Quasinormal mode approach to modelling light-emission and propagation in nanoplasmonics. <i>New Journal of Physics</i> , 2014, 16, 113048.	2.9	94

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19	Influence of Electronâ€™Acoustic-Phonon Scattering on Intensity Power Broadening in a Coherently Driven Quantum-Dotâ€™Cavity System. <i>Physical Review X</i> , 2011, 1, .	8.9	78
20	Coupled-Cavity QED Using Planar Photonic Crystals. <i>Physical Review Letters</i> , 2007, 98, 083603.	7.8	76
21	Influence of electron-acoustic phonon scattering on off-resonant cavity feeding within a strongly coupled quantum-dot cavity system. <i>Physical Review B</i> , 2011, 83, .	3.2	75
22	Can light be stopped in realistic metamaterials?. <i>Nature</i> , 2008, 455, E10-E11.	27.8	67
23	Disorder-induced incoherent scattering losses in photonic crystal waveguides: Bloch mode reshaping, multiple scattering, and breakdown of the Beer-Lambert law. <i>Physical Review B</i> , 2009, 80, .	3.2	66
24	Phonon-assisted incoherent excitation of a quantum dot and its emission properties. <i>Physical Review B</i> , 2012, 86, .	3.2	60
25	Macroscopic entanglement and violation of Bellâ€™s inequalities between two spatially separated quantum dots in a planar photonic crystal system. <i>Optics Express</i> , 2009, 17, 11505.	3.4	59
26	Role of electron-phonon scattering on the vacuum Rabi splitting of a single-quantum dot and a photonic crystal nanocavity. <i>Physical Review B</i> , 2008, 78, .	3.2	57
27	Accessing quantum nanoplasmonics in a hybrid quantum dotâ€™metal nanosystem: Mollow triplet of a quantum dot near a metal nanoparticle. <i>Physical Review B</i> , 2013, 87, .	3.2	57
28	Theory of quantum light emission from a strongly-coupled single quantum dot photonic-crystal cavity system. <i>Optics Express</i> , 2009, 17, 3322.	3.4	53
29	Modal theory of modified spontaneous emission of a quantum emitter in a hybrid plasmonic photonic-crystal cavity system. <i>Physical Review A</i> , 2017, 95, .	2.5	53
30	Quantum theory of the emission spectrum from quantum dots coupled to structured photonic reservoirs and acoustic phonons. <i>Physical Review B</i> , 2015, 92, .	3.2	52
31	Anisotropy-Induced Quantum Interference and Population Trapping between Orthogonal Quantum Dot Exciton States in Semiconductor Cavity Systems. <i>Physical Review Letters</i> , 2017, 118, 063601.	7.8	47
32	Design of an efficient single photon source from a metallic nanorod dimer: a quasi-normal mode finite-difference time-domain approach. <i>Optics Letters</i> , 2014, 39, 4235.	3.3	44
33	Nonlocal quasinormal modes for arbitrarily shaped three-dimensional plasmonic resonators. <i>Optica</i> , 2017, 4, 1503.	9.3	44
34	Quantum dynamics of two quantum dots coupled through localized plasmons: An intuitive and accurate quantum optics approach using quasinormal modes. <i>Physical Review B</i> , 2015, 92, .	3.2	43
35	Phonon-mediated population inversion in a semiconductor quantum-dot cavity system. <i>New Journal of Physics</i> , 2013, 15, 053039.	2.9	41
36	Molecular Optomechanics in the Anharmonic Cavity-QED Regime Using Hybrid Metalâ€™Dielectric Cavity Modes. <i>ACS Photonics</i> , 2019, 6, 1400-1408.	6.6	40

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37	Quantum Optics Model of Surface-Enhanced Raman Spectroscopy for Arbitrarily Shaped Plasmonic Resonators. <i>ACS Photonics</i> , 2017, 4, 1245-1256.	6.6	38
38	Cavity-enhanced simultaneous dressing of quantum dot exciton and biexciton states. <i>Physical Review B</i> , 2016, 93, .	3.2	36
39	Quantized quasinormal-mode description of nonlinear cavity-QED effects from coupled resonators with a Fano-like resonance. <i>Physical Review Research</i> , 2020, 2, .	3.6	35
40	Polaron master equation theory of pulse-driven phonon-assisted population inversion and single-photon emission from quantum-dot excitons. <i>Physical Review B</i> , 2016, 93, .	3.2	33
41	Spontaneous emission from a quantum dot in a structured photonic reservoir: phonon-mediated breakdown of Fermi's golden rule. <i>Optica</i> , 2015, 2, 434.	9.3	32
42	Nonlinear photoluminescence spectra from a quantum-dot-cavity system: Interplay of pump-induced stimulated emission and anharmonic cavity QED. <i>Physical Review B</i> , 2010, 81, .	3.2	31
43	Stationary Inversion of a Two Level System Coupled to an Off-Resonant Cavity with Strong Dissipation. <i>Physical Review Letters</i> , 2011, 107, 193601.	7.8	31
44	Transient and steady-state entanglement mediated by three-dimensional plasmonic waveguides. <i>Optics Express</i> , 2015, 23, 22330.	3.4	31
45	Theory of intrinsic propagation losses in topological edge states of planar photonic crystals. <i>Physical Review Research</i> , 2020, 2, .	3.6	31
46	Finite-difference time-domain technique as an efficient tool for calculating the regularized Green function: applications to the local-field problem in quantum optics for inhomogeneous lossy materials. <i>Optics Letters</i> , 2012, 37, 2880.	3.3	30
47	Self-consistent Maxwell-Bloch model of quantum-dot photonic-crystal-cavity lasers. <i>Physical Review A</i> , 2017, 96, .	2.5	30
48	Decay dynamics of radiatively coupled quantum dots in photonic crystal slabs. <i>Physical Review B</i> , 2011, 83, .	3.2	29
49	Pulsed excitation dynamics in quantum-dot-cavity systems: Limits to optimizing the fidelity of on-demand single-photon sources. <i>Physical Review B</i> , 2018, 98, .	3.2	28
50	Theory and Limits of On-Demand Single-Photon Sources Using Plasmonic Resonators: A Quantized Quasinormal Mode Approach. <i>ACS Photonics</i> , 2019, 6, 2168-2180.	6.6	26
51	Controlled cavity QED and single-photon emission using a photonic-crystal waveguide cavity system. <i>Physical Review B</i> , 2009, 80, .	3.2	25
52	Theory and experiments of disorder-induced resonance shifts and mode-edge broadening in deliberately disordered photonic crystal waveguides. <i>Physical Review A</i> , 2015, 92, .	2.5	25
53	Disorder-induced resonance shifts in high-index-contrast photonic crystal nanocavities. <i>Physical Review B</i> , 2009, 79, .	3.2	24
54	Modeling quantum light-matter interactions in waveguide QED with retardation, nonlinear interactions, and a time-delayed feedback: Matrix product states versus a space-discretized waveguide model. <i>Physical Review Research</i> , 2021, 3, .	3.6	23

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55	Fermi's Golden Rule for Spontaneous Emission in Absorptive and Amplifying Media. <i>Physical Review Letters</i> , 2021, 127, 013602.	7.8	23
56	Polarization-dependent strong coupling in elliptical high- $Q$ micropillar cavities. <i>Physical Review B</i> , 2010, 82, .	3.2	21
57	Anderson Localization of Visible Light on a Nanophotonic Chip. <i>ACS Photonics</i> , 2017, 4, 2274-2280.	6.6	21
58	Statistics of Anderson-localized modes in disordered photonic crystal slab waveguides. <i>Physical Review B</i> , 2017, 95, .	3.2	21
59	Regularized quasinormal modes for plasmonic resonators and open cavities. <i>Physical Review B</i> , 2018, 97, .	3.2	21
60	Coherently triggered single photons from a quantum-dot cavity system. <i>Physical Review B</i> , 2010, 82, .	3.2	20
61	Gauge freedom, quantum measurements, and time-dependent interactions in cavity QED. <i>Physical Review Research</i> , 2021, 3, .	3.6	20
62	Efficient Pulse Excitation Techniques for Single Photon Sources from Quantum Dots in Optical Cavities. <i>Advanced Quantum Technologies</i> , 2020, 3, 1900073.	3.9	19
63	Cavity-assisted fast generation of entangled photon pairs through the biexciton-exciton cascade. <i>Physical Review B</i> , 2009, 80, .	3.2	18
64	Quasinormal Modes, Local Density of States, and Classical Purcell Factors for Coupled Loss-Gain Resonators. <i>Physical Review X</i> , 2021, 11, .	8.9	18
65	Gauge-independent emission spectra and quantum correlations in the ultrastrong coupling regime of open system cavity-QED. <i>Nanophotonics</i> , 2022, 11, 1573-1590.	6.0	18
66	Broadband Purcell factor enhancements in photonic-crystal ridge waveguides. <i>Physical Review B</i> , 2009, 80, .	3.2	17
67	Interplay between disorder-induced scattering and local field effects in photonic crystal waveguides. <i>Physical Review B</i> , 2010, 81, .	3.2	17
68	THz-driven quantum wells: Coulomb interactions and Stark shifts in the ultrastrong coupling regime. <i>New Journal of Physics</i> , 2011, 13, 083009.	2.9	17
69	Entanglement dynamics and Mollow nonuplets between two coupled quantum dots in a nanowire photonic-crystal system. <i>Physical Review A</i> , 2015, 91, .	2.5	17
70	Hyperbolic metamaterial nanoresonators make poor single-photon sources. <i>Physical Review B</i> , 2017, 95, .	3.2	17
71	Quantum trajectory theory of few-photon cavity-QED systems with a time-delayed coherent feedback. <i>Physical Review A</i> , 2020, 101, .	2.5	17
72	Near-field to far-field transformations of optical quasinormal modes and efficient calculation of quantized quasinormal modes for open cavities and plasmonic resonators. <i>Physical Review B</i> , 2020, 101, .	3.2	17

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73	Mollow quintuplets from coherently excited quantum dots. <i>Optics Letters</i> , 2013, 38, 1691.	3.3	16
74	Reducing disorder-induced losses for slow light photonic crystal waveguides through Bloch mode engineering. <i>Optics Letters</i> , 2013, 38, 4244.	3.3	16
75	Anderson Localization in Disordered LN Photonic Crystal Slab Cavities. <i>ACS Photonics</i> , 2018, 5, 1262-1272.	6.6	16
76	Influence of electron-phonon scattering for an on-demand quantum dot single-photon source using cavity-assisted adiabatic passage. <i>Physical Review B</i> , 2017, 96, .	3.2	15
77	Inverse design of broadband and lossless topological photonic crystal waveguide modes. <i>Optics Letters</i> , 2021, 46, 1732.	3.3	15
78	Resonant Raman scattering of single molecules under simultaneous strong cavity coupling and ultrastrong optomechanical coupling in plasmonic resonators: Phonon-dressed polaritons. <i>Physical Review B</i> , 2021, 104, .	3.2	15
79	Chiral quantum optics in broken-symmetry and topological photonic crystal waveguides. <i>Physical Review Research</i> , 2022, 4, .	3.6	15
80	Time-delayed quantum coherent Pyragas feedback control of photon squeezing in a degenerate parametric oscillator. <i>Physical Review A</i> , 2016, 94, .	2.5	14
81	Theory and experiments of coherent photon coupling in semiconductor nanowire waveguides with quantum dot molecules. <i>Physical Review B</i> , 2019, 99, .	3.2	14
82	Gauge principle and gauge invariance in two-level systems. <i>Physical Review A</i> , 2021, 103, .	2.5	14
83	Fluctuation-dissipation theorem and fundamental photon commutation relations in lossy nanostructures using quasinormal modes. <i>Physical Review Research</i> , 2020, 2, .	3.6	13
84	Role of Bloch mode reshaping and disorder correlation length on scattering losses in slow-light photonic crystal waveguides. <i>Physical Review B</i> , 2015, 91, .	3.2	12
85	Strong coupling regime and hybrid quasinormal modes from a single plasmonic resonator coupled to a transition metal dichalcogenide monolayer. <i>Physical Review B</i> , 2021, 104, .	3.2	12
86	Regimes of cavity QED under incoherent excitation: From weak to deep strong coupling. <i>Physical Review Research</i> , 2022, 4, .	3.6	12
87	Quantized quasinormal-mode theory of coupled lossy and amplifying resonators. <i>Physical Review A</i> , 2022, 105, .	2.5	11
88	Quasinormal mode theory and modelling of electron energy loss spectroscopy for plasmonic nanostructures. <i>Journal of Optics (United Kingdom)</i> , 2016, 18, 054002.	2.2	10
89	Nanoscale plasmonic slot waveguides for enhanced Raman spectroscopy. <i>Physical Review B</i> , 2018, 98, .	3.2	10
90	Connecting Classical and Quantum Mode Theories for Coupled Lossy Cavity Resonators Using Quasinormal Modes. <i>ACS Photonics</i> , 2022, 9, 138-155.	6.6	10

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91	Self-consistent numerical modeling of radiatively damped Lorentz oscillators. <i>Physical Review A</i> , 2017, 95, .	2.5	8
92	Exploiting Long-Range Disorder in Slow-Light Photonic Crystal Waveguides: Anderson Localization and Ultrahigh $Q$ Cavities. <i>ACS Photonics</i> , 2019, 6, 2926-2932.	6.6	8
93	Dissipative modes, Purcell factors, and directional beta factors in gold bowtie nanoantenna structures. <i>Physical Review B</i> , 2020, 102, .	3.2	8
94	High-resolution spectroscopy of a quantum dot driven bichromatically by two strong coherent fields. <i>Physical Review Research</i> , 2021, 3, .	3.6	8
95	Cavitylike strong coupling in macroscopic waveguide QED using three coupled qubits in the deep non-Markovian regime. <i>Physical Review A</i> , 2021, 104, .	2.5	8
96	Quasinormal-mode theory of elastic Purcell factors and Fano resonances of optomechanical beams. <i>Physical Review Research</i> , 2020, 2, .	3.6	8
97	Quasinormal Mode Theory of Chiral Power Flow from Linearly Polarized Dipole Emitters Coupled to Index-Modulated Microring Resonators Close to an Exceptional Point. <i>ACS Photonics</i> , 2022, 9, 1315-1326.	6.6	8
98	Polariton waveguides from a quantum dot chain in a photonic crystal waveguide: an architecture for waveguide quantum electrodynamics. <i>Optica</i> , 2016, 3, 370.	9.3	7
99	Enhanced TEMPO Algorithm for Quantum Path Integrals with Off-Diagonal System-Bath Coupling: Applications to Photonic Quantum Networks. <i>Physical Review Letters</i> , 2022, 128, 167403.	7.8	7
100	Spectral multiphoton effects and quantum anharmonicities in dissipative cavity-QED systems via off-resonant coherent excitation. <i>Optica</i> , 2015, 2, 689.	9.3	6
101	Quasinormal mode theory and design of on-chip single photon emitters in photonic crystal coupled-cavity waveguides. <i>Optics Express</i> , 2016, 24, 13574.	3.4	6
102	Soliton Pulse Propagation in the Presence of Disorder-Induced Multiple Scattering in Photonic Crystal Waveguides. <i>Physical Review Letters</i> , 2017, 118, 253901.	7.8	5
103	Plasmonic linewidth narrowing by encapsulation in a dispersive absorbing material. <i>Physical Review Research</i> , 2021, 3, .	3.6	5
104	Accessing the bath information in open quantum systems with the stochastic c-number Langevin equation method. <i>Physical Review A</i> , 2019, 100, .	2.5	4
105	Theory of hyperbolic stratified nanostructures for surface-enhanced Raman scattering. <i>Physical Review B</i> , 2017, 96, .	3.2	3
106	All-Optical Tuning of Indistinguishable Single Photons Generated in Three-Level Quantum Systems. <i>Nano Letters</i> , 2022, 22, 3562-3568.	9.1	3
107	Using the Autler-Townes and ac Stark effects to optically tune the frequency of indistinguishable single photons from an on-demand source. <i>Physical Review Research</i> , 2022, 4, .	3.6	2
108	Space-time computation and visualization of the electromagnetic fields and potentials generated by moving point charges. <i>American Journal of Physics</i> , 2021, 89, 482-489.	0.7	1

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109	PyCharge: An open-source Python package for self-consistent electrodynamic simulations of Lorentz oscillators and moving point charges. Computer Physics Communications, 2022, 274, 108291.	7.5	1
110	Coupling Perovskite Quantum Dot Pairs in Solution using a Nanoplasmonic Assembly. Nano Letters, 2022, 22, 5287-5293.	9.1	1
111	Exploiting coherent light-matter interactions in semiconductor quantum dot &#x2014; Cavity systems. , 2011, , .		0
112	Nonlinear coupled mode approach for modeling counterpropagating solitons in the presence of disorder-induced multiple scattering in photonic crystal waveguides. Physical Review B, 2018, 97, .	3.2	0
113	Phonon-induced interactions and entanglement formation between two microcavity modes mediated by two semiconductor quantum dots. Physical Review A, 2020, 102, .	2.5	0
114	Inverse design of broadband and lossless topological photonic crystal waveguide modes. , 2021, , .		0
115	Efficient modeling techniques in nanophotonics. , 2018, , .		0