

Steven A Cummer

List of Publications by Year in descending order

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314
papers

26,513
citations

10986

71
h-index

6654

156
g-index

319
all docs

319
docs citations

319
times ranked

11620
citing authors

#	ARTICLE	IF	CITATIONS
1	Metamaterial Electromagnetic Cloak at Microwave Frequencies. <i>Science</i> , 2006, 314, 977-980.	12.6	6,680
2	Controlling sound with acoustic metamaterials. <i>Nature Reviews Materials</i> , 2016, 1, .	48.7	1,328
3	One path to acoustic cloaking. <i>New Journal of Physics</i> , 2007, 9, 45-45.	2.9	882
4	Full-wave simulations of electromagnetic cloaking structures. <i>Physical Review E</i> , 2006, 74, 036621.	2.1	717
5	Wavefront modulation and subwavelength diffractive acoustics with an acoustic metasurface. <i>Nature Communications</i> , 2014, 5, 5553.	12.8	691
6	Design of electromagnetic cloaks and concentrators using form-invariant coordinate transformations of Maxwell's equations. <i>Photonics and Nanostructures - Fundamentals and Applications</i> , 2008, 6, 87-95.	2.0	647
7	Three-dimensional broadband omnidirectional acoustic ground cloak. <i>Nature Materials</i> , 2014, 13, 352-355.	27.5	493
8	Optical Design of Reflectionless Complex Media by Finite Embedded Coordinate Transformations. <i>Physical Review Letters</i> , 2008, 100, 063903.	7.8	413
9	Scattering Theory Derivation of a 3D Acoustic Cloaking Shell. <i>Physical Review Letters</i> , 2008, 100, 024301.	7.8	413
10	Experimental Demonstration of Electromagnetic Tunneling Through an Epsilon-Near-Zero Metamaterial at Microwave Frequencies. <i>Physical Review Letters</i> , 2008, 100, 023903.	7.8	408
11	Experimental Acoustic Ground Cloak in Air. <i>Physical Review Letters</i> , 2011, 106, 253901.	7.8	374
12	Non-reciprocal and highly nonlinear active acoustic metamaterials. <i>Nature Communications</i> , 2014, 5, 3398.	12.8	363
13	Tunable Asymmetric Transmission via Lossy Acoustic Metasurfaces. <i>Physical Review Letters</i> , 2017, 119, 035501.	7.8	313
14	Measurement of a Broadband Negative Index with Space-Coiling Acoustic Metamaterials. <i>Physical Review Letters</i> , 2013, 110, 175501.	7.8	282
15	High-Energy Atmospheric Physics: Terrestrial Gamma-Ray Flashes and Related Phenomena. <i>Space Science Reviews</i> , 2012, 173, 133-196.	8.1	257
16	Systematic design and experimental demonstration of bianisotropic metasurfaces for scattering-free manipulation of acoustic wavefronts. <i>Nature Communications</i> , 2018, 9, 1342.	12.8	185
17	Ionospheric Region remote sensing using VLF radio atmospherics. <i>Radio Science</i> , 1998, 33, 1781-1792.	1.6	184
18	A broadband low-reflection metamaterial absorber. <i>Journal of Applied Physics</i> , 2010, 108, .	2.5	184

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19	A sound absorbing metasurface with coupled resonators. <i>Applied Physics Letters</i> , 2016, 109, .	3.3	173
20	Measurements and implications of the relationship between lightning and terrestrial gamma ray flashes. <i>Geophysical Research Letters</i> , 2005, 32, .	4.0	165
21	Design and measurements of a broadband two-dimensional acoustic lens. <i>Physical Review B</i> , 2011, 84, .	3.2	160
22	Compact Dielectric Particles as a Building Block for Low-Loss Magnetic Metamaterials. <i>Physical Review Letters</i> , 2008, 100, 207401.	7.8	155
23	ELF radiation produced by electrical currents in sprites. <i>Geophysical Research Letters</i> , 1998, 25, 1281-1284.	4.0	152
24	Lightning charge moment changes for the initiation of sprites. <i>Geophysical Research Letters</i> , 2002, 29, 1201-1204.	4.0	149
25	Submillisecond imaging of sprite development and structure. <i>Geophysical Research Letters</i> , 2006, 33, .	4.0	149
26	A survey of ELF and VLF research on lightning-ionosphere interactions and causative discharges. <i>Journal of Geophysical Research</i> , 2010, 115, .	3.3	146
27	Oxidant Enhancement in Martian Dust Devils and Storms: Implications for Life and Habitability. <i>Astrobiology</i> , 2006, 6, 439-450.	3.0	144
28	Tapered labyrinthine acoustic metamaterials for broadband impedance matching. <i>Applied Physics Letters</i> , 2013, 103, 201906.	3.3	143
29	Asymmetric acoustic transmission through near-zero-index and gradient-index metasurfaces. <i>Applied Physics Letters</i> , 2016, 108, .	3.3	139
30	Reversal of transmission and reflection based on acoustic metagratings with integer parity design. <i>Nature Communications</i> , 2019, 10, 2326.	12.8	135
31	Dispersion tuning and route reconfiguration of acoustic waves in valley topological phononic crystals. <i>Nature Communications</i> , 2020, 11, 762.	12.8	135
32	Broadband Acoustic Hyperbolic Metamaterial. <i>Physical Review Letters</i> , 2015, 115, 254301.	7.8	134
33	Acoustic Holographic Rendering with Two-dimensional Metamaterial-based Passive Phased Array. <i>Scientific Reports</i> , 2016, 6, 35437.	3.3	131
34	Programmable Acoustic Metasurfaces. <i>Advanced Functional Materials</i> , 2019, 29, 1808489.	14.9	130
35	Lightning mapping observation of a terrestrial gamma-ray flash. <i>Geophysical Research Letters</i> , 2010, 37, .	4.0	123
36	Implications of lightning charge moment changes for sprite initiation. <i>Journal of Geophysical Research</i> , 2005, 110, .	3.3	119

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37	Design and characterization of broadband acoustic composite metamaterials. <i>Physical Review B</i> , 2009, 80, .	3.2	114
38	A simple, nearly perfectly matched layer for general electromagnetic media. <i>IEEE Microwave and Wireless Components Letters</i> , 2003, 13, 128-130.	3.2	113
39	A microwave metamaterial with integrated power harvesting functionality. <i>Applied Physics Letters</i> , 2013, 103, .	3.3	112
40	Characteristics of Sprite-Producing Positive Cloud-to-Ground Lightning during the 19 July 2000 STEPS Mesoscale Convective Systems. <i>Monthly Weather Review</i> , 2003, 131, 2417-2427.	1.4	110
41	Active acoustic metamaterials reconfigurable in real time. <i>Physical Review B</i> , 2015, 91, .	3.2	110
42	Cloaking with optimized homogeneous anisotropic layers. <i>Physical Review A</i> , 2009, 79, .	2.5	109
43	Tunable active acoustic metamaterials. <i>Physical Review B</i> , 2013, 88, .	3.2	109
44	Simulated causal subwavelength focusing by a negative refractive index slab. <i>Applied Physics Letters</i> , 2003, 82, 1503-1505.	3.3	104
45	Electric and magnetic signatures of dust devils from the 2000â€“2001 MATADOR desert tests. <i>Journal of Geophysical Research</i> , 2004, 109, .	3.3	104
46	Dual-band planar electric metamaterial in the terahertz regime. <i>Optics Express</i> , 2008, 16, 9746.	3.4	100
47	The lightning-TGF relationship on microsecond timescales. <i>Geophysical Research Letters</i> , 2011, 38, n/a-n/a.	4.0	96
48	Modeling ELF radio atmospheric propagation and extracting lightning currents from ELF observations. <i>Radio Science</i> , 2000, 35, 385-394.	1.6	94
49	Oxidant Enhancement in Martian Dust Devils and Storms: Storm Electric Fields and Electron Dissociative Attachment. <i>Astrobiology</i> , 2006, 6, 451-462.	3.0	94
50	Measurement of charge transfer in sprite-producing lightning using ELF radio atmospherics. <i>Geophysical Research Letters</i> , 1997, 24, 1731-1734.	4.0	93
51	Sprites triggered by negative lightning discharges. <i>Geophysical Research Letters</i> , 1999, 26, 3605-3608.	4.0	92
52	Design and demonstration of broadband thin planar diffractive acoustic lenses. <i>Applied Physics Letters</i> , 2014, 105, .	3.3	92
53	Unusually intense continuing current in lightning produces delayed mesospheric breakdown. <i>Geophysical Research Letters</i> , 2001, 28, 495-498.	4.0	91
54	Coordinated analysis of delayed sprites with high-speed images and remote electromagnetic fields. <i>Journal of Geophysical Research</i> , 2008, 113, .	3.3	87

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55	Design and measurements of a broadband two-dimensional acoustic metamaterial with anisotropic effective mass density. <i>Journal of Applied Physics</i> , 2011, 109, .	2.5	87
56	The source altitude, electric current, and intrinsic brightness of terrestrial gamma ray flashes. <i>Geophysical Research Letters</i> , 2014, 41, 8586-8593.	4.0	87
57	Detecting electrical activity from Martian dust storms. <i>Journal of Geophysical Research</i> , 1999, 104, 3795-3801.	3.3	83
58	Material parameters and vector scaling in transformation acoustics. <i>New Journal of Physics</i> , 2008, 10, 115025.	2.9	81
59	Characterization of Tunable Metamaterial Elements Using MEMS Switches. <i>IEEE Antennas and Wireless Propagation Letters</i> , 2007, 6, 401-404.	4.0	80
60	Lightning leader altitude progression in terrestrial gamma-ray flashes. <i>Geophysical Research Letters</i> , 2015, 42, 7792-7798.	4.0	80
61	Contrasting the efficiency of radiation belt losses caused by ducted and nonducted whistler-mode waves from ground-based transmitters. <i>Journal of Geophysical Research</i> , 2010, 115, .	3.3	79
62	Spectral dependence of terrestrial gamma-ray flashes on source distance. <i>Geophysical Research Letters</i> , 2009, 36, .	4.0	78
63	Frequency tunable electromagnetic metamaterial using ferroelectric loaded split rings. <i>Journal of Applied Physics</i> , 2008, 103, .	2.5	76
64	Testing sprite initiation theory using lightning measurements and modeled electromagnetic fields. <i>Journal of Geophysical Research</i> , 2007, 112, .	3.3	75
65	Wide angle impedance matching metamaterials for waveguide-fed phased-array antennas. <i>IET Microwaves, Antennas and Propagation</i> , 2010, 4, 1063.	1.4	75
66	New measurements of lightning electric fields in Florida: Waveform characteristics, interaction with the ionosphere, and peak current estimates. <i>Journal of Geophysical Research</i> , 2012, 117, .	3.3	75
67	Ground-level observation of a terrestrial gamma ray flash initiated by a triggered lightning. <i>Journal of Geophysical Research D: Atmospheres</i> , 2016, 121, 6511-6533.	3.3	74
68	Discharge processes, electric field, and electron energy in ISUAL-recorded gigantic jets. <i>Journal of Geophysical Research</i> , 2009, 114, .	3.3	73
69	Coordinated observations of sprites and in-cloud lightning flash structure. <i>Journal of Geophysical Research D: Atmospheres</i> , 2013, 118, 6607-6632.	3.3	73
70	Sound vortex diffraction via topological charge in phase gradient metagratings. <i>Science Advances</i> , 2020, 6, .	10.3	73
71	Current moment in sprite-producing lightning. <i>Journal of Atmospheric and Solar-Terrestrial Physics</i> , 2003, 65, 499-508.	1.6	72
72	Phase Conjugation and Negative Refraction using Nonlinear Active Metamaterials. <i>Physical Review Letters</i> , 2010, 105, 123905.	7.8	72

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73	Midlatitude nighttime D region ionosphere variability on hourly to monthly time scales. <i>Journal of Geophysical Research</i> , 2010, 115, .	3.3	70
74	Acoustic metacages for sound shielding with steady air flow. <i>Journal of Applied Physics</i> , 2018, 123, .	2.5	70
75	Charge transfer and in-cloud structure of large-charge-moment positive lightning strokes in a mesoscale convective system. <i>Geophysical Research Letters</i> , 2009, 36, .	4.0	68
76	A dual-resonant terahertz metamaterial based on single-particle electric-field-coupled resonators. <i>Applied Physics Letters</i> , 2008, 93, .	3.3	67
77	Analysis of the first gigantic jet recorded over continental North America. <i>Journal of Geophysical Research</i> , 2007, 112, .	3.3	66
78	Characteristics of broadband lightning emissions associated with terrestrial gamma ray flashes. <i>Journal of Geophysical Research</i> , 2011, 116, .	3.3	66
79	Single-sensor multispeaker listening with acoustic metamaterials. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , 2015, 112, 10595-10598.	7.1	66
80	Quantification of the troposphere-to-ionosphere charge transfer in a gigantic jet. <i>Nature Geoscience</i> , 2009, 2, 617-620.	12.9	64
81	Insights into high peak current in-cloud lightning events during thunderstorms. <i>Geophysical Research Letters</i> , 2015, 42, 6836-6843.	4.0	64
82	Roadmap on transformation optics. <i>Journal of Optics (United Kingdom)</i> , 2018, 20, 063001.	2.2	64
83	Characterization of complementary electric field coupled resonant surfaces. <i>Applied Physics Letters</i> , 2008, 93, .	3.3	63
84	Multi-instrumental observations of a positive gigantic jet produced by a winter thunderstorm in Europe. <i>Journal of Geophysical Research</i> , 2010, 115, .	3.3	63
85	Radio emissions from terrestrial gamma-ray flashes. <i>Journal of Geophysical Research: Space Physics</i> , 2013, 118, 3769-3790.	2.4	63
86	Acoustofluidic Holography for Micro- to Nanoscale Particle Manipulation. <i>ACS Nano</i> , 2020, 14, 14635-14645.	14.6	62
87	Perfectly matched layer behavior in negative refractive index materials. <i>IEEE Antennas and Wireless Propagation Letters</i> , 2004, 3, 172-175.	4.0	59
88	Modeling elves observed by FORMOSAT-2 satellite. <i>Journal of Geophysical Research</i> , 2007, 112, .	3.3	59
89	Halos generated by negative cloud-to-ground lightning. <i>Geophysical Research Letters</i> , 2007, 34, .	4.0	58
90	Rare measurements of a sprite with halo event driven by a negative lightning discharge over Argentina. <i>Geophysical Research Letters</i> , 2008, 35, .	4.0	58

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91	Nonreciprocal active metamaterials. <i>Physical Review B</i> , 2012, 85, .	3.2	58
92	Subwavelength diffractive acoustics and wavefront manipulation with a reflective acoustic metasurface. <i>Journal of Applied Physics</i> , 2016, 120, .	2.5	58
93	Microwave metamaterials made by fused deposition 3D printing of a highly conductive copper-based filament. <i>Applied Physics Letters</i> , 2017, 110, .	3.3	58
94	Design of an acoustic metamaterial lens using genetic algorithms. <i>Journal of the Acoustical Society of America</i> , 2012, 132, 2823-2833.	1.1	56
95	Zero loss magnetic metamaterials using powered active unit cells. <i>Optics Express</i> , 2009, 17, 16135.	3.4	55
96	Homogeneous and compact acoustic ground cloaks. <i>Physical Review B</i> , 2011, 83, .	3.2	55
97	Lightning morphology and impulse charge moment change of high peak current negative strokes. <i>Journal of Geophysical Research</i> , 2012, 117, .	3.3	55
98	Harnessing Multiple Internal Reflections to Design Highly Absorptive Acoustic Metasurfaces. <i>Physical Review Applied</i> , 2018, 9, .	3.8	55
99	A terrestrial gamma ray flash observed from an aircraft. <i>Journal of Geophysical Research</i> , 2011, 116, .	3.3	54
100	Simultaneous observations of optical lightning and terrestrial gamma ray flash from space. <i>Geophysical Research Letters</i> , 2013, 40, 2423-2426.	4.0	54
101	Gamma Ray Signatures of Neutrons From a Terrestrial Gamma Ray Flash. <i>Geophysical Research Letters</i> , 2017, 44, 10,063.	4.0	54
102	Power flowâ€œconformal metamirrors for engineering wave reflections. <i>Science Advances</i> , 2019, 5, eaau7288.	10.3	53
103	Detection of daytime sprites via a unique sprite ELF signature. <i>Geophysical Research Letters</i> , 2000, 27, 871-874.	4.0	52
104	Optical source transformations. <i>Optics Express</i> , 2008, 16, 21215.	3.4	52
105	A lowâ€œfrequency nearâ€œfield interferometricâ€œTOA 3â€œ Lightning Mapping Array. <i>Geophysical Research Letters</i> , 2014, 41, 7777-7784.	4.0	52
106	Lightning Initiation Processes Imaged With Very High Frequency Broadband Interferometry. <i>Journal of Geophysical Research D: Atmospheres</i> , 2019, 124, 2994-3004.	3.3	52
107	Acoustic Imaging with Metamaterial Luneburg Lenses. <i>Scientific Reports</i> , 2018, 8, 16188.	3.3	51
108	Wave fields measured inside a negative refractive index metamaterial. <i>Applied Physics Letters</i> , 2004, 85, 4564-4566.	3.3	50

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109	Characterizing the effects of disorder in metamaterial structures. Applied Physics Letters, 2007, 91, 162907.	3.3	50
110	Midlatitude daytime D region ionosphere variations measured from radio atmospherics. Journal of Geophysical Research, 2010, 115, .	3.3	49
111	A surface impedance-based three-channel acoustic metasurface retroreflector. Applied Physics Letters, 2018, 112, .	3.3	49
112	Nonreciprocal sound propagation in space-time modulated media. Physical Review B, 2019, 99, .	3.2	49
113	Imaging lightning intracloud initial stepped leaders by low-frequency interferometric lightning mapping array. Geophysical Research Letters, 2016, 43, 5516-5523.	4.0	48
114	Charge moment change and lightning-driven electric fields associated with negative sprites and halos. Journal of Geophysical Research, 2012, 117, .	3.3	47
115	Synthetic exceptional points and unidirectional zero reflection in non-Hermitian acoustic systems. Physical Review Materials, 2018, 2, .	2.4	47
116	Conformal array design with transformation electromagnetics. Applied Physics Letters, 2009, 94, .	3.3	46
117	Three years of lightning impulse charge moment change measurements in the United States. Journal of Geophysical Research D: Atmospheres, 2013, 118, 5176-5189.	3.3	46
118	A simple electrodynamic model of a dust devil. Geophysical Research Letters, 2003, 30, .	4.0	45
119	Gigantic jets with negative and positive polarity streamers. Journal of Geophysical Research, 2010, 115, .	3.3	45
120	Nonreciprocal acoustic transmission in space-time modulated coupled resonators. Physical Review B, 2019, 100, .	3.2	45
121	Achromatic metasurfaces by dispersion customization for ultra-broadband acoustic beam engineering. National Science Review, 2022, 9, .	9.5	45
122	Determining the effective electromagnetic properties of negative-refractive-index metamaterials from internal fields. Physical Review B, 2005, 72, .	3.2	44
123	Lightning development associated with two negative gigantic jets. Geophysical Research Letters, 2011, 38, n/a-n/a.	4.0	44
124	A completely covariant approach to transformation optics. Journal of Optics (United Kingdom), 2011, 13, 024008.	2.2	44
125	Polarity and energetics of inner core lightning in three intense North Atlantic hurricanes. Journal of Geophysical Research, 2010, 115, .	3.3	43
126	Complex coordinates in transformation optics. Physical Review A, 2011, 84, .	2.5	43

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127	Daytime ionospheric D-region sharpness derived from VLF radio atmospherics. Journal of Geophysical Research, 2011, 116, .	3.3	43
128	Nighttime D-region electron density profiles and variabilities inferred from broadband measurements using VLF radio emissions from lightning. Journal of Geophysical Research, 2006, 111, .	3.3	42
129	Transient luminous events above two mesoscale convective systems: Storm structure and evolution. Journal of Geophysical Research, 2010, 115, .	3.3	42
130	The rarity of terrestrial gamma-ray flashes. Geophysical Research Letters, 2011, 38, n/a-n/a.	4.0	42
131	Direct measurement of evanescent wave enhancement inside passive metamaterials. Physical Review E, 2006, 73, 016617.	2.1	41
132	Ground detection of terrestrial gamma ray flashes from distant radio signals. Geophysical Research Letters, 2016, 43, 8728-8734.	4.0	41
133	Systematic design of broadband path-coiling acoustic metamaterials. Journal of Applied Physics, 2018, 123, .	2.5	41
134	Compact acoustic retroreflector based on a mirrored Luneburg lens. Physical Review Materials, 2018, 2, .	2.4	41
135	Broadband VLF measurements of lightning-induced ionospheric perturbations. Geophysical Research Letters, 2005, 32, .	4.0	40
136	Auroral electron distributions derived from combined UV and X-ray emissions. Journal of Geophysical Research, 2001, 106, 26081-26089.	3.3	39
137	Q-Based Design Equations and Loss Limits for Resonant Metamaterials and Experimental Validation. IEEE Transactions on Antennas and Propagation, 2008, 56, 127-132.	5.1	39
138	Ground-based detection of sprites and their parent lightning flashes over Africa during the 2006 AMMA campaign. Quarterly Journal of the Royal Meteorological Society, 2010, 136, 257-271.	2.7	39
139	Beta-type stepped leader of elve-producing lightning. Geophysical Research Letters, 2005, 32, .	4.0	38
140	Broadband very low frequency measurement of D-region ionospheric perturbations caused by lightning electromagnetic pulses. Journal of Geophysical Research, 2007, 112, n/a-n/a.	3.3	38
141	Highly Efficient Generation of Angular Momentum with Cylindrical Bianisotropic Metasurfaces. Physical Review Applied, 2019, 11, .	3.8	38
142	Needles and Lightning Leader Dynamics Imaged with 100–200 MHz Broadband VHF Interferometry. Geophysical Research Letters, 2019, 46, 13556-13563.	4.0	38
143	Three dimensional acoustic tweezers with vortex streaming. Communications Physics, 2021, 4, .	5.3	38
144	Dynamics of causal beam refraction in negative refractive index materials. Applied Physics Letters, 2003, 82, 2008-2010.	3.3	37

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145	RF Limiter Metamaterial Using p-i-n Diodes. IEEE Antennas and Wireless Propagation Letters, 2011, 10, 1571-1574.	4.0	37
146	Global-scale electron precipitation features seen in UV and X rays during substorms. Journal of Geophysical Research, 1999, 104, 10191-10204.	3.3	36
147	Lightning charge moment changes in U.S. High Plains thunderstorms. Geophysical Research Letters, 2004, 31, n/a-n/a.	4.0	36
148	Upward electrical discharges observed above Tropical Depression Dorian. Nature Communications, 2015, 6, 5995.	12.8	36
149	Submillisecond resolution lightning currents and sprite development: Observations and implications. Geophysical Research Letters, 1999, 26, 3205-3208.	4.0	35
150	Simultaneous radio and satellite optical measurements of high-altitude sprite current and lightning continuing current. Journal of Geophysical Research, 2006, 111, .	3.3	35
151	Comparison of sprite initiation altitudes between observations and models. Journal of Geophysical Research, 2011, 116, n/a-n/a.	3.3	35
152	Electromagnetic source transformations using superellipse equations. Applied Physics Letters, 2009, 94, 194101.	3.3	34
153	Observations of Blue Discharges Associated With Negative Narrow Bipolar Events in Active Deep Convection. Geophysical Research Letters, 2018, 45, 2842-2851.	4.0	34
154	Reconfigurable Reflectarray Using Addressable Metamaterials. IEEE Antennas and Wireless Propagation Letters, 2010, 9, 70-74.	4.0	33
155	VLF remote sensing of high-energy auroral particle precipitation. Journal of Geophysical Research, 1997, 102, 7477-7484.	3.3	32
156	SUPERCELLS AND SPRITES. Bulletin of the American Meteorological Society, 2008, 89, 1165-1174.	3.3	32
157	Measurement of sprite streamer acceleration and deceleration. Geophysical Research Letters, 2009, 36, .	4.0	32
158	An architecture for active metamaterial particles and experimental validation at RF. Microwave and Optical Technology Letters, 2007, 49, 2574-2577.	1.4	31
159	A rigorous and nonsingular two dimensional cloaking coordinate transformation. Journal of Applied Physics, 2009, 105, 056102.	2.5	31
160	Is the Martian water table hidden from radar view?. Geophysical Research Letters, 2009, 36, .	4.0	30
161	A lightning discharge producing a beam of relativistic electrons into space. Geophysical Research Letters, 2010, 37, .	4.0	30
162	Frequency conversion by exploiting time in transformation optics. Journal of Optics (United) Tj ETQq0 0 0 rgBT /Overlock 10 Tf 50 62 Td	2.2	30

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163	An analysis of five negative spriteâ€parent discharges and their associated thunderstorm charge structures. <i>Journal of Geophysical Research D: Atmospheres</i> , 2016, 121, 759-784.	3.3	30
164	Low Frequency Radio Pulses Produced by Terrestrial Gammaâ€Ray Flashes. <i>Geophysical Research Letters</i> , 2019, 46, 6990-6997.	4.0	30
165	Selecting the Direction of Sound Transmission. <i>Science</i> , 2014, 343, 495-496.	12.6	29
166	Radio Interferometer Observations of an Energetic inâ€Cloud Pulse Reveal Large Currents Generated by Relativistic Discharges. <i>Journal of Geophysical Research D: Atmospheres</i> , 2020, 125, e2020JD032603.	3.3	29
167	Radio atmospheric propagation on Mars and potential remote sensing applications. <i>Journal of Geophysical Research</i> , 1999, 104, 14149-14157.	3.3	28
168	Asymmetric Absorption in Acoustic Metamirror Based on Surface Impedance Engineering. <i>Physical Review Applied</i> , 2019, 12, .	3.8	28
169	Non-reciprocal acoustic transmission via space-time modulated membranes. <i>Applied Physics Letters</i> , 2020, 116, .	3.3	28
170	Ionospheric Eregion remote sensing with ELF radio atmospherics. <i>Radio Science</i> , 2000, 35, 1437-1444.	1.6	27
171	Low frequency lumped element-based negative index metamaterial. <i>Applied Physics Letters</i> , 2007, 91, .	3.3	26
172	Very High Frequency Radio Emissions Associated With the Production of Terrestrial Gammaâ€Ray Flashes. <i>Geophysical Research Letters</i> , 2018, 45, 2097-2105.	4.0	26
173	Fabrication and experimental demonstration of a hybrid resonant acoustic gradient index metasurface at 40 kHz. <i>Applied Physics Letters</i> , 2019, 114, .	3.3	26
174	Nonreciprocal acoustic transmission in cascaded resonators via spatiotemporal modulation. <i>Physical Review B</i> , 2019, 99, .	3.2	26
175	Cause of the localized maximum of X-ray emission in the morning sector: A comparison with electron measurements. <i>Journal of Geophysical Research</i> , 2000, 105, 20869-20883.	3.3	25
176	The properties of a gigantic jet reflected in a simultaneous sprite: Observations interpreted by a model. <i>Journal of Geophysical Research</i> , 2011, 116, n/a-n/a.	3.3	25
177	Anisotropic acoustic metafluid for underwater operation. <i>Journal of the Acoustical Society of America</i> , 2016, 139, 3325-3331.	1.1	25
178	Transfer matrix method for the analysis of space-time-modulated media and systems. <i>Physical Review B</i> , 2019, 100, .	3.2	25
179	Elves Accompanying Terrestrial Gamma Ray Flashes. <i>Journal of Geophysical Research: Space Physics</i> , 2017, 122, 10,563.	2.4	24
180	Lumped element-based, highly sub-wavelength, negative index metamaterials at UHF frequencies. <i>Journal of Applied Physics</i> , 2008, 104, .	2.5	23

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181	Transient luminous events above two mesoscale convective systems: Charge moment change analysis. <i>Journal of Geophysical Research</i> , 2011, 116, n/a-n/a.	3.3	23
182	Radar and lightning analyses of gigantic jet-producing storms. <i>Journal of Geophysical Research D: Atmospheres</i> , 2013, 118, 2872-2888.	3.3	23
183	A Terrestrial Gamma-Ray Flash inside the Eyewall of Hurricane Patricia. <i>Journal of Geophysical Research D: Atmospheres</i> , 2018, 123, 4977-4987.	3.3	23
184	Generalized transformation optics of linear materials. <i>Journal of Optics (United Kingdom)</i> , 2011, 13, 055105.	2.2	22
185	The meteorology of negative cloud-to-ground lightning strokes with large charge moment changes: Implications for negative sprites. <i>Journal of Geophysical Research D: Atmospheres</i> , 2013, 118, 7886-7896.	3.3	22
186	Observation-constrained modeling of the ionospheric impact of negative sprites. <i>Geophysical Research Letters</i> , 2016, 43, 2365-2373.	4.0	22
187	A study of changes in apparent ionospheric reflection height within individual lightning flashes. <i>Journal of Atmospheric and Solar-Terrestrial Physics</i> , 2015, 136, 66-79.	1.6	21
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