Saul A Teukolsky

List of Publications by Year in descending order

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#	Article	IF	CITATIONS
1	Savitzky-Golay Smoothing Filters. Computers in Physics, 1990, 4, 669-672.	0.6	3,161
2	GW151226: Observation of Gravitational Waves from a 22-Solar-Mass Binary Black Hole Coalescence. Physical Review Letters, 2016, 116, 241103.	2.9	2,701
3	Rotating Black Holes: Locally Nonrotating Frames, Energy Extraction, and Scalar Synchrotron Radiation. Astrophysical Journal, 1972, 178, 347.	1.6	1,865
4	Perturbations of a Rotating Black Hole. I. Fundamental Equations for Gravitational, Electromagnetic, and Neutrino-Field Perturbations. Astrophysical Journal, 1973, 185, 635.	1.6	1,471
5	Tests of General Relativity with GW150914. Physical Review Letters, 2016, 116, 221101.	2.9	1,224
6	Rotating Black Holes: Separable Wave Equations for Gravitational and Electromagnetic Perturbations. Physical Review Letters, 1972, 29, 1114-1118.	2.9	740
7	Properties of the Binary Black Hole Merger GW150914. Physical Review Letters, 2016, 116, 241102.	2.9	673
8	Floating Orbits, Superradiant Scattering and the Black-hole Bomb. Nature, 1972, 238, 211-212.	13.7	525
9	Rapidly rotating neutron stars in general relativity: Realistic equations of state. Astrophysical Journal, 1994, 424, 823.	1.6	506
10	Perturbations of a Rotating Black Hole. II. Dynamical Stability of the Kerr Metric. Astrophysical Journal, 1973, 185, 649.	1.6	461
11	Catalog of 174 Binary Black Hole Simulations for Gravitational Wave Astronomy. Physical Review Letters, 2013, 111, 241104.	2.9	325
12	High-accuracy comparison of numerical relativity simulations with post-Newtonian expansions. Physical Review D, 2007, 76, .	1.6	305
13	Formation of naked singularities: The violation of cosmic censorship. Physical Review Letters, 1991, 66, 994-997.	2.9	233
14	Testing the No-Hair Theorem with GW150914. Physical Review Letters, 2019, 123, 111102.	2.9	220
15	Spin-up of a rapidly rotating star by angular momentum loss - Effects of general relativity. Astrophysical Journal, 1992, 398, 203.	1.6	219
16	The SXS collaboration catalog of binary black hole simulations. Classical and Quantum Gravity, 2019, 36, 195006.	1.5	217
17	A multidomain spectral method for solving elliptic equations. Computer Physics Communications, 2003, 152, 253-273.	3.0	196
18	Rapidly rotating polytropes in general relativity. Astrophysical Journal, 1994, 422, 227.	1.6	193

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19	Solving Einsteinâ $€$ ™s equations with dual coordinate frames. Physical Review D, 2006, 74, .	1.6	171
20	Saturation of therâ€Mode Instability. Astrophysical Journal, 2003, 591, 1129-1151.	1.6	168
21	Extending the lifetime of 3D black hole computations with a new hyperbolic system of evolution equations. Physical Review D, 2001, 64, .	1.6	138
22	Black-hole–neutron-star mergers at realistic mass ratios: Equation of state and spin orientation effects. Physical Review D, 2013, 87, .	1.6	134
23	Evolving black hole-neutron star binaries in general relativity using pseudospectral and finite difference methods. Physical Review D, 2008, 78, .	1.6	133
24	Black Hole Ringdown: The Importance of Overtones. Physical Review X, 2019, 9, .	2.8	133
25	Collapse to black holes in Brans-Dicke theory. II. Comparison with general relativity. Physical Review D, 1995, 51, 4236-4249.	1.6	127
26	Error-analysis and comparison to analytical models of numerical waveforms produced by the NRAR Collaboration. Classical and Quantum Gravity, 2013, 31, 025012.	1.5	123
27	Stability of the iterated Crank-Nicholson method in numerical relativity. Physical Review D, 2000, 61, .	1.6	121
28	Collapse to black holes in Brans-Dicke theory. I. Horizon boundary conditions for dynamical spacetimes. Physical Review D, 1995, 51, 4208-4235.	1.6	113
29	The Kerr metric. Classical and Quantum Gravity, 2015, 32, 124006.	1.5	106
30	Black hole-neutron star mergers: Effects of the orientation of the black hole spin. Physical Review D, 2011, 83, .	1.6	103
31	Gravitational Wave Extraction and Outer Boundary Conditions by Perturbative Matching. Physical Review Letters, 1998, 80, 1812-1815.	2.9	102
32	Boosted Three-Dimensional Black-Hole Evolutions with Singularity Excision. Physical Review Letters, 1998, 80, 2512-2516.	2.9	102
33	Effects of waveform model systematics on the interpretation of GW150914. Classical and Quantum Gravity, 2017, 34, 104002.	1.5	98
34	Spin evolution of accreting neutron stars: Nonlinear development of the <mml:math xmlns:mml="http://www.w3.org/1998/Math/MathML" display="inline"><mml:mi>r</mml:mi>-mode instability. Physical Review D, 2007, 76, .</mml:math 	1.6	93
35	Spinning down newborn neutron stars: Nonlinear development of the <mml:math xmlns:mml="http://www.w3.org/1998/Math/MathML" display="inline"><mml:mi>r</mml:mi>-mode instability. Physical Review D, 2009, 79, .</mml:math 	1.6	90
36	Accretion onto a moving black hole: An exact solution. Physical Review Letters, 1988, 60, 1781-1784.	2.9	89

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37	Binary Neutron Stars in General Relativity: Quasiequilibrium Models. Physical Review Letters, 1997, 79, 1182-1185.	2.9	88
38	An observational test for the existence of a planetary system orbiting PSR1257 + 12. Nature, 1992, 355, 325-326.	13.7	87
39	Stable Characteristic Evolution of Generic Three-Dimensional Single-Black-Hole Spacetimes. Physical Review Letters, 1998, 80, 3915-3918.	2.9	87
40	Geometry of a Black Hole Collision. Science, 1995, 270, 941-947.	6.0	83
41	Accretion onto a moving black hole - A fully relativistic treatment. Astrophysical Journal, 1989, 336, 313.	1.6	83
42	On the properties of the massive binary black hole merger GW170729. Physical Review D, 2019, 100, .	1.6	82
43	Simulated Annealing Optimization over Continuous Spaces. Computers in Physics, 1991, 5, 426-429.	0.6	80
44	Black hole evolution by spectral methods. Physical Review D, 2000, 62, .	1.6	79
45	Initial data for black hole–neutron star binaries: A flexible, high-accuracy spectral method. Physical Review D, 2008, 77, .	1.6	77
46	SpECTRE: A task-based discontinuous Galerkin code for relativistic astrophysics. Journal of Computational Physics, 2017, 335, 84-114.	1.9	77
47	Equation of state effects in black hole–neutron star mergers. Classical and Quantum Gravity, 2010, 27, 114106.	1.5	76
48	Linearized quadrupole waves in general relativity and the motion of test particles. Physical Review D, 1982, 26, 745-750.	1.6	74
49	Dynamical excision boundaries in spectral evolutions of binary black hole spacetimes. Classical and Quantum Gravity, 2013, 30, 115001.	1.5	74
50	Finding black holes in numerical spacetimes. Physical Review D, 1994, 49, 4004-4015.	1.6	72
51	Final spin and radiated energy in numerical simulations of binary black holes with equal masses and equal, aligned or antialigned spins. Physical Review D, 2013, 88, .	1.6	72
52	Testing a simplified version of Einstein's equations for numerical relativity. Physical Review D, 1996, 53, 5533-5540.	1.6	71
53	Search Algorithm For Weak Periodic Signals In Unevenly Spaced Data. Computers in Physics, 1988, 2, 77.	0.6	69
54	Irrotational Binary Neutron Stars in Quasiâ€Equilibrium in General Relativity. Astrophysical Journal, 1998, 504, 442-449.	1.6	69

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55	Recycling Pulsars to Millisecond Periods in General Relativity. Astrophysical Journal, 1994, 423, L117.	1.6	68
56	Modeling the source of GW150914 with targeted numerical-relativity simulations. Classical and Quantum Gravity, 2016, 33, 244002.	1.5	67
57	Numerical binary black hole collisions in dynamical Chern-Simons gravity. Physical Review D, 2019, 100,	1.6	67
58	Computing supernova collapse to neutron stars and black holes. Astrophysical Journal, 1995, 443, 717.	1.6	65
59	Portable Random Number Generators. Computers in Physics, 1992, 6, 522.	0.6	61
60	Toroidal black holes and topological censorship. Physical Review D, 1995, 52, 6982-6987.	1.6	60
61	Quasicircular orbits for spinning binary black holes. Physical Review D, 2000, 62, .	1.6	60
62	Delayed Collapse of Hot Neutron Stars to Black Holes via Hadronic Phase Transitions. Astrophysical Journal, 1996, 468, 823.	1.6	60
63	Comparing initial-data sets for binary black holes. Physical Review D, 2002, 66, .	1.6	58
64	On choosing the start time of binary black hole ringdowns. Physical Review D, 2018, 97, .	1.6	58
65	Black hole-neutron star mergers for <mml:math <br="" xmlns:mml="http://www.w3.org/1998/Math/MathML">display="inline"><mml:mn>10</mml:mn><mml:mtext> </mml:mtext><mml:mtext> </mml:mtext> holes. Physical Review D, 2012, 85, .</mml:math>	nl:musaub><	mr at zmi>M
66	Measuring orbital eccentricity and periastron advance in quasicircular black hole simulations. Physical Review D, 2010, 82, .	1.6	56
67	Periastron advance in spinning black hole binaries: Gravitational self-force from numerical relativity. Physical Review D, 2013, 88, .	1.6	54
68	Numerical relativity simulation of GW150914 beyond general relativity. Physical Review D, 2020, 101, .	1.6	54
69	Adaptive Stepsize Runge-Kutta Integration. Computers in Physics, 1992, 6, 188-191.	0.6	53
70	Gravitational collapse of rotating spheroids and the formation of naked singularities. Physical Review D, 1992, 45, 2006-2012.	1.6	52
71	Solving Einstein's equations for rotating spacetimes: Evolution of relativistic star clusters. Physical Review D, 1994, 49, 5153-5164.	1.6	51
72	Periastron advance in spinning black hole binaries: comparing effective-one-body and numerical relativity. Physical Review D, 2013, 88, .	1.6	50

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73	Implementing an apparent-horizon finder in three dimensions. Physical Review D, 1996, 54, 4849-4857.	1.6	49
74	Testing the Black-Hole Area Law with GW150914. Physical Review Letters, 2021, 127, 011103.	2.9	49
75	3D simulations of linearized scalar fields in Kerr spacetime. Physical Review D, 2004, 69, .	1.6	45
76	Nonlinear couplings of R-modes: Energy transfer and saturation amplitudes at realistic timescales. Physical Review D, 2004, 70, .	1.6	44
77	Stability of relativistic neutron stars in binary orbit. Physical Review D, 1998, 57, 6181-6184.	1.6	43
78	Naked singularities and the hoop conjecture: An analytic exploration. Physical Review D, 1988, 38, 2972-2978.	1.6	42
79	Oppenheimer-Snyder collapse with maximal time slicing and isotropic coordinates. Physical Review D, 1985, 31, 2459-2469.	1.6	41
80	Fitting Straight Line Data with Errors in Both Coordinates. Computers in Physics, 1992, 6, 274-276.	0.6	40
81	Numerical Recipes in C++: The Art of Scientific Computing (2nd edn) 1 Numerical Recipes Example Book (C++) (2nd edn) 2 Numerical Recipes Multi-Language Code CD ROM with LINUX or UNIX Single-Screen License Revised Version 3. European Journal of Physics, 2003, 24, 329-330.	0.3	40
82	Kolmogorov-Smirnov Test for Two-Dimensional Data. Computers in Physics, 1988, 2, 74-77.	0.6	39
83	Simulations of inspiraling and merging double neutron stars using the Spectral Einstein Code. Physical Review D, 2016, 93, .	1.6	39
84	Nonlinear coupling network to simulate the development of thermode instability in neutron stars. II.ÂDynamics. Physical Review D, 2005, 71, .	1.6	38
85	Computation of displacement and spin gravitational memory in numerical relativity. Physical Review D, 2020, 102, .	1.6	37
86	Computing the Delayed Collapse of Hot Neutron Stars to Black Holes. Astrophysical Journal, 1996, 458, 680.	1.6	36
87	Vacuum initial data, singularities, and cosmic censorship. Physical Review D, 1992, 46, 2452-2463.	1.6	35
88	Adding gravitational memory to waveform catalogs using BMS balance laws. Physical Review D, 2021, 103, .	1.6	35
89	Orthogonal Polynomials and Gaussian Quadrature with Nonclassical Weight Functions. Computers in Physics, 1990, 4, 423.	0.6	34
90	Collisions of relativistic clusters and the formation of black holes. Physical Review D, 1992, 45, 2739-2750.	1.6	33

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91	Toward stable 3D numerical evolutions of black-hole spacetimes. Physical Review D, 2002, 66, .	1.6	33
92	High accuracy simulations of Kerr tails: coordinate dependence and higher multipoles. Classical and Quantum Gravity, 2008, 25, 105022.	1.5	33
93	Nonlinear coupling network to simulate the development of the r-mode instability in neutron stars. I. Construction. Physical Review D, 2004, 70, .	1.6	32
94	Constraining the parameters of GW150914 and GW170104 with numerical relativity surrogates. Physical Review D, 2019, 99, .	1.6	32
95	Controlling the growth of constraints in hyperbolic evolution systems. Physical Review D, 2004, 69, .	1.6	31
96	What is causing the eclipse in the millisecond binary pulsar?. Astrophysical Journal, 1989, 342, 934.	1.6	31
97	Quasi- (that is, Sub-) Random Numbers. Computers in Physics, 1989, 3, 76-79.	0.6	30
98	Numerical evolution of black holes with a hyperbolic formulation of general relativity. Physical Review D, 1997, 56, 6320-6335.	1.6	30
99	Exploding neutron stars near the minimum mass. Astrophysical Journal, 1989, 339, 318.	1.6	29
100	Do Neutrino Rest Masses Affect Cosmological Helium Production?. Physical Review Letters, 1980, 45, 669-672.	2.9	28
101	Calculation of gravitational waveforms from black hole collisions and disk collapse: Applying perturbation theory to numerical spacetimes. Physical Review D, 1995, 51, 4295-4301.	1.6	28
102	Magnetic effects on the low- <mml:math <br="" xmlns:mml="http://www.w3.org/1998/Math/MathML">display="inline"> <mml:mrow> <mml:mi>T</mml:mi> <mml:mo>/</mml:mo> <mml:mo stretchy="false"> <mml:mi>W</mml:mi> <mml:mo stretchy="false"> </mml:mo </mml:mo </mml:mrow> </mml:math> instability in differentially rotating neutron	1.6	28
103	stars. Physical Review D, 2014, 90, . A hydrodynamical model for the explosion of a neutron star just below the minimum mass. Astrophysical Journal, 1993, 414, 717.	1.6	28
104	Scalar gravitation: A laboratory for numerical relativity. Physical Review D, 1993, 47, 1529-1540.	1.6	27
105	Solving the Vlasov equation in general relativity. Astrophysical Journal, 1989, 344, 146.	1.6	27
106	Improved Cauchy-characteristic evolution system for high-precision numerical relativity waveforms. Physical Review D, 2020, 102, .	1.6	26
107	Formulation of discontinuous Galerkin methods for relativistic astrophysics. Journal of Computational Physics, 2016, 312, 333-356.	1.9	25
108	Multigrid Methods for Boundary Value Problems. I Computers in Physics, 1991, 5, 514.	0.6	24

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109	Testing nuclear theory using the 0.5 ms pulsar. Nature, 1989, 340, 451-452.	13.7	23
110	Evolving metric perturbations in dynamical Chern-Simons gravity. Physical Review D, 2019, 99, .	1.6	23
111	Oppenheimer-Snyder collapse in polar time slicing. Physical Review D, 1986, 33, 2100-2110.	1.6	21
112	Treating instabilities in a hyperbolic formulation of Einstein's equations. Physical Review D, 1998, 58, .	1.6	21
113	Explosion of a rotating neutron star near the minimum mass. Astrophysical Journal, 1991, 369, 422.	1.6	21
114	High precision ringdown modeling: Multimode fits and BMS frames. Physical Review D, 2022, 105, .	1.6	21
115	Orbiting binary black hole evolutions with a multipatch high order finite-difference approach. Physical Review D, 2009, 80, .	1.6	20
116	On the Measurement of the Mass of PSR 1913+16. Astrophysical Journal, 1975, 198, L27.	1.6	20
117	The explanation of the Trouton–Noble experiment revisited. American Journal of Physics, 1996, 64, 1104-1109.	0.3	18
118	Ineffectiveness of Padé resummation techniques in post-Newtonian approximations. Physical Review D, 2008, 78, .	1.6	18
119	Spectral methods for the wave equation in second-order form. Physical Review D, 2010, 82, .	1.6	18
120	On the Evolution of the Secularly Unstable, Viscous Maclaurian Spheroids. Astrophysical Journal, 1973, 181, 513.	1.6	18
121	Numerical black hole initial data and shadows in dynamical Chern–Simons gravity. Classical and Quantum Gravity, 2019, 36, 054001.	1.5	16
122	Extending gravitational wave extraction using Weyl characteristic fields. Physical Review D, 2021, 103,	1.6	16
123	On the existence of stable relativistic star clusters with arbitrarily large central redshifts. Astrophysical Journal, 1989, 336, L63.	1.6	16
124	Spin-up of a rapidly rotating star by angular momentum loss. Astrophysical Journal, 1990, 357, L17.	1.6	16
125	General-relativistic neutron star evolutions with the discontinuous Galerkin method. Physical Review D, 2018, 98, .	1.6	15
126	Fixing the BMS frame of numerical relativity waveforms. Physical Review D, 2021, 104, .	1.6	15

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127	Relativistic Stellar Systems with Spindle Singularities. Astrophysical Journal, 1993, 419, 622.	1.6	15
128	Short note on the mass matrix for Gauss–Lobatto grid points. Journal of Computational Physics, 2015, 283, 408-413.	1.9	13
129	Comparing remnant properties from horizon data and asymptotic data in numerical relativity. Physical Review D, 2021, 103, .	1.6	13
130	Elliptic Integrals. Computers in Physics, 1990, 4, 92-96.	0.6	12
131	Numerical relativity: challenges for computational science. Acta Numerica, 1999, 8, 1-45.	6.3	12
132	Simulations of axisymmetric, Newtonian star clusters - Prelude to 2 + 1 general relativistic computations. Astrophysical Journal, 1987, 318, 542.	1.6	12
133	Relativistic Stellar Systems with Rotation. Astrophysical Journal, 1993, 419, 636.	1.6	12
134	Waveform propagation in black hole spacetimes: Evaluating the quality of numerical solutions. Physical Review D, 1998, 57, 1084-1091.	1.6	11
135	Numerical Calculation of Derivatives. Computers in Physics, 1991, 5, 68-69.	0.6	10
136	Numerical Recipes: Does This Paradigm Have a Future?. Computers in Physics, 1997, 11, 416.	0.6	10
137	Critical behavior in 3D gravitational collapse of massless scalar fields. Physical Review D, 2019, 99, .	1.6	10
138	Gravitational radiation from colliding clusters - Newtonian simulations in three dimensions. Astrophysical Journal, 1990, 358, 81.	1.6	10
139	Computing Accurate Integrals with the FFT. Computers in Physics, 1989, 3, 91-94.	0.6	9
140	Toroidal horizons in binary black hole mergers. Physical Review D, 2016, 94, .	1.6	9
141	How big are supermassive black holes formed from the collapse of dense star clusters?. Astrophysical Journal, 1987, 320, 73.	1.6	9
142	Parallel adaptive event horizon finder for numerical relativity. Physical Review D, 2016, 94, .	1.6	8
143	Perturbations of a Rotating Black Hole. Symposium - International Astronomical Union, 1974, 64, 92-92.	0.1	7
144	Scalar gravitation: A laboratory for numerical relativity. II. Disks. Physical Review D, 1994, 49, 1886-1893.	1.6	7

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145	Stablest Shapes for an Axisymmetric Body of Gravitating, Incompressible Fluid. Astrophysical Journal, 1977, 214, 584.	1.6	7
146	Simulating magnetized neutron stars with discontinuous Galerkin methods. Physical Review D, 2022, 105, .	1.6	7
147	Building Black Holes: Supercomputer Cinema. Science, 1988, 241, 421-425.	6.0	6
148	Fredholm and Volterra Integral Equations of the Second Kind. Computers in Physics, 1990, 4, 554-557.	0.6	6
149	Padel̀•Approximants. Computers in Physics, 1992, 6, 82.	0.6	6
150	Are Trojans pursuing the eclipsing pulsar?. Nature, 1988, 333, 213-213.	13.7	5
151	Biconjugate Gradient Method for Sparse Linear Systems. Computers in Physics, 1992, 6, 400.	0.6	5
152	Equilibrium and stability of relativistic cylindrical polytropes. Physical Review D, 1993, 48, 592-606.	1.6	5
153	Scalar gravitation: A laboratory for numerical relativity. III. Axisymmetry. Physical Review D, 1994, 49, 1894-1905.	1.6	5
154	Are different approaches to constructing initial data for binary black hole simulations of the same astrophysical situation equivalent?. Physical Review D, 2012, 86, .	1.6	5
155	Initial data for high-compactness black hole–neutron star binaries. Classical and Quantum Gravity, 2016, 33, 105009.	1.5	5
156	GRAVITATIONAL WAVES AND BLACK HOLES. Annals of the New York Academy of Sciences, 1975, 262, 275-283.	1.8	4
157	Bessel Functions of Fractional Order. Computers in Physics, 1991, 5, 244.	0.6	4
158	Evaluating Continued Fractions and Computing Exponential Integrals. Computers in Physics, 1988, 2, 88-89.	0.6	3
159	Fresnel Integrals, Cosine and Sine Integrals. Computers in Physics, 1992, 6, 670.	0.6	3
160	Hot, Rotating Disks in General Relativity: Collisionless Equilibrium Models. Astrophysical Journal, 1999, 521, 310-318.	1.6	3
161	Multigrid Methods for Boundary Value Problems. II Computers in Physics, 1991, 5, 626.	0.6	2
162	A High-Order, Conservative Integrator with Local Time-Stepping. SIAM Journal of Scientific Computing, 2020, 42, A3730-A3760.	1.3	2

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163	Equilibrium stellar systems with spindle singularities. Astrophysical Journal, 1992, 388, 287.	1.6	2
164	A scalable elliptic solver with task-based parallelism for the SpECTRE numerical relativity code. Physical Review D, 2022, 105, .	1.6	2
165	Hypergeometric Functions by Direct Path Integration. Computers in Physics, 1990, 4, 320.	0.6	1
166	Numerical Calculations of Black Holes and Naked Singularities. Annals of the New York Academy of Sciences, 1991, 647, 158-163.	1.8	1
167	Disk collapse in general relativity. Physical Review D, 1994, 50, 7282-7291.	1.6	1
168	Efficient simulations of high-spin black holes with a new gauge. Physical Review D, 2021, 104, .	1.6	1
169	Solving the Vlasov Equation in General Relativity by Particle Simulation. Annals of the New York Academy of Sciences, 1988, 536, 53-75.	1.8	0
170	Modified Bessel Functions of Fractional Order. Computers in Physics, 1991, 5, 330.	0.6	0
171	Growth of perturbations in homogeneous collisionless collapse: discs versus spheres. Monthly Notices of the Royal Astronomical Society, 1995, 276, 847-858.	1.6	0
172	Numerical relativity: maximizing the scientific payoff from gravitational wave detection. , 2003, 4856, 116.		0
173	Mining for Observables: A New Challenge in Numerical Relativity. AIP Conference Proceedings, 2006, , .	0.3	0
174	Edwin Salpeter (1924–2008). Nature, 2009, 457, 275-275.	13.7	0
175	EVOLVING RELATIVISTIC FLUID SPACETIMES USING PSEUDOSPECTRAL METHODS AND FINITE DIFFERENCING. , 2008, , .		0
176	Simulations of Axisymmetic, Newtonian Star Clusters: Prelude to 2 + 1 General Relativistic Computations: Erratum. Astrophysical Journal, 1988, 324, 1221.	1.6	0