

William H. Press

6/2023

Present position:

Professor, Department of Computer Science and Department of Integrative Biology, and Leslie Surginer Professor, University of Texas at Austin, 2007–

Concurrent positions:

Treasurer, National Academy of Sciences (NAS); member of NAS Council; member of National Research Council (NRC) Governing Board, 2016–
Faculty, Oden Institute for Computational Engineering and Sciences, UT Austin, 2007–
Faculty, Institute for Cellular and Molecular Biology, UT Austin 2007–, Warren J. and Viola M. Raymer Faculty Fellow, 2018–
Laboratory Senior Fellow, Los Alamos National Laboratory, 2004–2008; emeritus, 2008–

Previous positions:

Deputy Laboratory Director for Science and Technology, Los Alamos National Laboratory, 1998–2004
Professor of Astronomy and of Physics, Harvard University, 1976–1998; Department Chair in Astronomy, 1982–85
Assistant Professor of Physics, Princeton University, 1974–76
Assistant Professor of Theoretical Physics, California Institute of Technology, 1973–74
Richard Chace Tolman Research Fellow in Theoretical Physics, California Institute of Technology, 1972–73
Fannie and John Hertz Foundation Graduate Fellow, California Institute of Technology, 1969–72

Honors and awards:

Member, National Academy of Sciences, 1994–; Computer and Information Sciences Section, founding member, 2000–
Fellow, American Academy of Arts and Sciences, 1993–
Member, Council on Foreign Relations, 2002–
Fellow, American Association for the Advancement of Science, 2014–
Member, The Academy of Medicine, Engineering, and Science of Texas, 2007–
William D. Carey Medal, American Association for the Advancement of Science, 2015
California Institute of Technology Distinguished Alumnus Award, 2008

Most frequently cited U.S. Astronomer, 1990-1993 (study in *Quarterly Journal Royal Astronomical Society*)

Science Digest America's 100 Brightest Scientists Under 40, 1984

Helen B. Warner Prize of the American Astronomical Society, 1981

Alfred P. Sloan Foundation Research Fellow, 1974–78

Associations:

Fellow, American Association for the Advancement of Science (AAAS)

Fellow, American Physical Society

Association for Computing Machinery

American Astronomical Society

International Astronomical Union

International Society on General Relativity and Gravitation

Sigma Xi

Phi Beta Kappa

Education:

Ph.D. California Institute of Technology, 1972 (Physics)

Ph.D. advisor: Kip S. Thorne

M.S. California Institute of Technology, 1971 (Physics)

A.B. Harvard College, 1969 (Physics, *magna cum laude*)

Selected Professional Activities:

President's Council of Advisors on Science and Technology (PCAST).

Appointed, Obama Administration, 2009; Vice Chair, 2010–2017.

Reappointed, Biden Administration: 2021–

Flatiron Institute of the Simons Foundation, Scientific Advisory Board, 2018–

Simons Foundation (New York, NY), Board of Directors, 2017–

Institute for Defense Analyses (Alexandria, VA), Board of Trustees, 1988–

2021 (Executive Committee, 1990–2015); Emeritus 2021–2023

Editorial Board, Proceedings of the National Academy of Sciences (PNAS), 2007–

JASON Study Group (MITRE Corporation), 1977–

Chair, 1995-1998

Committee on International Security and Arms Control, NAS, 2008–2011

Participant, U.S.-China Cybersecurity Dialogues, 2011–

American Association for the Advancement of Science (AAAS),

President-elect, 2011-2012; President, 2012-2013; Board Chair, 2013-2014

Scientific Advisory Committee, David and Lucille Packard Fellowships for Science and Engineering, 1988–2014

Report Review Committee, National Research Council, 2005–2011

Computer Science and Telecommunications Board, National Research Council, 1991-1996 and 2008–2011

Chair, U.S. delegation to U.S.-France-Iran Workshop on Appropriate Uses of Science, NAS, 2009.

Chair, Nominating Committee for Council and Officers, NAS, 2005–2006

U.S.-Russia Committee on Strengthening Cooperative Nuclear Nonproliferation Programs, NAS, 2004–2005

Board of Visitors, Institute for Computational Engineering and Sciences (ICES), University of Texas, Austin, 2003–2006

Nominating Committee for President of NAS, 2003–2004

Committee on the Future of Supercomputing, NAS/NRC, 2003–2004

Division of Engineering and Physical Sciences Advisory Council, NAS/NRC, 2001–2005

Threat Reduction Advisory Committee (TRAC) Science and Technology Panel, Defense Threat Reduction Agency, 2000–2005

Co-Chair, Commission on Physical Sciences and Mathematical Applications, NAS/NRC, 2000–2001

SLAC Scientific Policy Committee, Stanford University, 1999–2002

Chair, Panel on Theory and Computation, Astronomy and Astrophysics Survey Committee, NAS/NRC, 1998–2000

National Reconnaissance Office Technical Advisory Group (charter member), 1998–2001

CNO Executive Panel, Office of the Chief of Naval Operations, Department of the Navy, 1994–2000

Heineman Prize Selection Committee, American Astronomical Society, 1996–1999; Warner-Pierce Prize Committee, 1991-1993

DCI's Science and Technology Advisory Panel (STAP), National Intelligence Council, 1996–1998

U.S. Delegation to XXII General Assembly, International Union of Pure and Applied Physics, 1996

Future of Space Science Steering Group, Space Studies Board, NAS/NRC, 1994–1996

German-American Frontiers of Science Organizing Committee, NAS/NRC, 1994–1995.

Committee on Non-Departmental Instruction, Harvard University Faculty of Arts and Sciences, 1992–1998

Superconducting Super-Collider Scientific Policy Committee, 1989–1992

Astronomy and Astrophysics Survey Committee (Bahcall Committee), NAS/NRC, 1989–91

Program Committee, Alfred P. Sloan Foundation, 1985–91

Physics Department Advisory Council, Princeton University, 1986–90
 Film and Television Committee, NAS, 1986–1992
 Member, U.S. Defense Science Board, 1985–1989
 Consultant, Lawrence Livermore National Laboratory, 1973–1993
 Consultant, Los Alamos National Laboratory, 1984–1990
 Associate Editor, *Annals of Physics*, 1984–91
 Advisory Board of the NSF Institute for Theoretical Physics, 1984–88;
 Chairman, 1986–87
 Visiting Member, Institute for Advanced Study, Spring Terms, 1983, 1984,
 1987, 1988, 1994
 Panel on Basic Science and Technology Centers, NAS, 1987.
 Scientific Advisory Committee, 13th Texas Symposium on Relativistic
 Astrophysics, 1985–86
 Theoretical and Computational Physics Advisory Committee, Los Alamos
 National Laboratory, 1984-1986
 Panel on the Interfaces and Applications of Physics of the Physics Survey
 Committee (Brinkman Committee), NAS/NRC, 1983-1984
 Visiting Committee, Department of Physics and Astronomy, University of
 Rochester, 1984
 Committee on Atmospheric Effects of Nuclear Explosions (NAS/ NRC),
 1983-1984
 Outside Consultant to the Commander, Air Force Geophysical Laboratory, 1982
 Organizing Committee, 11th Texas Symposium on Relativistic Astrophysics, 1982
 Advisory Committee on Physics (Physics Division, NSF), 1978-1981
 Chairman, Subcommittee on Computational Facilities for Theoretical Physics
 (Advisory Committee on Physics, Physics Division, NSF), 1980-1981
 Editorial Board, Series on Theoretical Astrophysics (University of Chicago
 Press), 1980-1985
 Advocacy Panel, Study on the Physics of the Sun (Space Science Board,
 NAS/NRC), 1980-1981
 Ad Hoc Committee on the Role of Theory in Space Sciences (Space Science
 Board, NAS/NRC), 1980
 Panel on Theoretical and Laboratory Astrophysics, and Panel on Data
 Processing and Computational Facilities, of the Astronomy Survey
 Committee (Field Committee), NAS/NRC, 1979-1980
 Ad Hoc Committee on New Directions (NASA Advisory Council), 1980
 Ad Hoc Committee on Innovation (NASA Advisory Council), 1979
 Review Panel on Gravitation Physics (Advisory Committee on Physics,
 Physics Division, NSF), 1978

Program Committee, 8th International Conference on General Relativity and
Gravitation, 1977

Other Information:

Born, May 23, 1948; married, two children.
Technician amateur radio license, K5KAA

Publications of William H. Press

1. W.H. Press and J.M. Bardeen, "Nonconservation of the Newman-Penrose Conserved Quantities," *Phys. Rev. Lett.*, **27**, 1303 (1971).
2. M. Davis, R. Ruffini, W. Press and R. Price, "Gravitational Radiation from a Particle Falling Radially into a Schwarzschild Black Hole," *Phys. Rev. Lett.*, **27**, 1466 (1971).
3. W.H. Press, "Long Wave-Trains of Gravitational Waves from a Vibrating Black Hole," *Astrophys. J. (Lett.)*, **170**, L105 (1971).
4. W.H. Press, "Time Evolution of a Rotating Black Hole Immersed in a Static Scalar Field," *Astrophys. J.*, **175**, 243 (1972).
5. W.H. Press and K.S. Thorne, "Gravitational-Wave Astronomy," *Ann. Rev. Astron. Astrophys.*, **10**, 335 (1972).
6. J.M. Bardeen, W.H. Press, and S.A. Teukolsky, "Rotating Black Holes: Locally Nonrotating Frames, Energy Extraction, and Scalar Synchrotron Radiation," *Astrophys. J.*, **178**, 347 (1972).
7. W.H. Press and S.A. Teukolsky, "Floating Orbits, Superradiant Scattering and the Black-Hole Bomb," *Nature*, **238**, 211 (1972).
8. J.M. Bardeen and W.H. Press, "Radiation Fields in the Schwarzschild Background," *J. Math. Phys.*, **14**, 7 (1973).
9. W.H. Press and S.A. Teukolsky, "On the Evolution of the Secularly Unstable, Viscous Maclaurin Spheroids," *Astrophys. J.*, **181**, 513 (1973).
10. W.H. Press, "Black-Hole Perturbations: An Overview," in Proceedings of the Sixth Texas Symposium on Relativistic Astrophysics, *Ann. N.Y. Acad. Sci.*, **224**, 272 (1973).
11. W.H. Press and S.A. Teukolsky, "Perturbations of a Rotating Black Hole. II. Dynamical Stability of the Kerr Metric," *Astrophys. J.* **185**, 649 (1973).
12. W.H. Press and J.E. Gunn, "Method for Detecting a Cosmological Density of Condensed Objects," *Astrophys. J.*, **185**, 397 (1973).
13. W.H. Press and P. Schechter, "Formation of Galaxies and Clusters of Galaxies by Self-Similar Gravitational Condensation," *Astrophys. J.*, **187**, 425 (1974).
14. W.H. Press, "Algorithm for Complementary Error Function," *Kellogg Laboratory Progress Report*, California Institute of Technology, (May 1974).
15. S.A. Teukolsky and W.H. Press, "Perturbations of a Rotating Black Hole, III. Interactions of the Hole with Electromagnetic and Gravitational Radiation," *Astrophys. J.*, **193**, 443 (1974).
16. W.H. Press and P. Schechter, "Remark on the Statistical Significance of Flares in Poisson Count Data," *Astrophys. J.*, **193**, 437 (1974).

17. W.H. Press, "Exotic Black-Hole Processes," in *Gravitation and Relativity*, Proceedings of the 7th International Conference on General Relativity and Gravitation, G. Shaviv and J. Rosen, eds. (Wiley, 1975).
18. D.M. Eardley and W.H. Press, "Astrophysical Processes near Black Holes," *Ann. Rev. Astron. Astrophys.*, **13**, 381 (1975).
19. A.P. Lightman, W.H. Press, R.H. Price, and S.A. Teukolsky, *Problem Book in Relativity and Gravitation*, with complete solutions 599 pp. + xiv (Princeton University Press, 1975; reissued 2017); also Russian-language translation: Moscow, Mir Publishers, 1979.
20. W.H. Press, "On the Relative Importance of Phase and Frequency Information in Pulsar Timing Measurements," *Astrophys. J.*, **200**, 182 (1975).
21. P. Schechter and W.H. Press, "Method for Determining Maximum Likelihood Distance Moduli for Groups of Galaxies," *Astrophys. J.*, **203**, 557 (1976).
22. W.H. Press, "On Estimating the Unprojected Luminosity Density within a Cluster of Galaxies," *Astrophys. J.*, **203**, 15 (1976).
23. W.H. Press, "Exact Evolution of Photons in an Anisotropic Cosmology with Scattering," *Astrophys. J.*, **205**, 311 (1976).
24. W.H. Press, P.J. Wiita, and L.L. Smarr, "Mechanism for Inducing Synchronous Rotation and Small Eccentricity in Close Binary Systems," *Astrophys. J. (Lett.)*, **202**, L135 (1975).
25. P.J. Wiita and W.H. Press, "Mass, Angular-Momentum Regimes for Certain Instabilities of a Compact, Rotating Stellar Core," *Astrophys. J.*, **208**, 525 (1976).
26. W.H. Press, "A 'Foil' for Gravitational Clustering Investigations," *Astron. Astrophys.*, **48**, 149 (1976).
27. W.H. Press, "Theoretical Maximum for Energy from Direct and Diffuse Sunlight" *Nature*, **264**, 734 (1976).
28. P.S. Marcus and W.H. Press, "On Green's Functions for Small Disturbances of Plane Couette Flow," *J. Fluid Mech.*, **79**, 525 (1977).
29. W.H. Press and S.A. Teukolsky, "On Formation of Close Binaries by Two-Body Tidal Capture," *Astrophys. J.*, **213**, 183 (1977).
30. P.S. Marcus, W.H. Press, and S.A. Teukolsky, "Stablest Shapes for an Axisymmetric Body of Gravitating, Incompressible Fluid," *Astrophys. J.*, **214**, 584 (1977).
31. W.H. Press, "On Gravitational Radiation from Sources which Extend into Their Own Wave Zone," *Phys. Rev. D.*, **15**, 965 (1977).
32. A.P. Lightman, W.H. Press, and S.F. Odenwald, "Present and Past Death Rates for Globular Clusters," *Astrophys. J.*, **219**, 629 (1978).
33. W.H. Press, "Flicker Noises in Astronomy and Elsewhere," *Comments on Astrophysics*, **7**, 103 (1978).

34. L.L. Smarr and W.H. Press, "Our Elastic Spacetime: Black Holes and Gravitational Waves," *American Scientist*, **66**, 72 (1978); also reply to letter, *op. cit.* **66**, 406 (1978).
35. W.H. Press and A.P. Lightman, "Possible Role of Collective Relaxation in Galaxy Correlations," *Astrophys. J. (Lett.)*, **219**, L73 (1978).
36. A.P. Lightman and W.H. Press, "Time Evolution of Galaxy Correlations in a Model for Gravitational Instability," *Astrophys. J.*, **225**, 667 (1978).
37. W.H. Press, "Mathematical Theory of the Waterbed," *Am. J. Phys.*, **46**, 966 (1978).
38. W.H. Press, "On Gravitational Conductors, Waveguides, and Circuits," *General Relativity and Gravitation*, **11**, 105 (1979).
39. W.H. Press, "Hierarchical Modification of Successive Over-Relaxation for 'Fast' Convergence of Elliptic Systems with General Boundaries," Center for Astrophysics Preprint No. 971 (1978).
40. B.P. Flannery and W.H. Press, "An Ionization-Coupled Acoustic Instability of the Interstellar Medium," *Astrophys. J.*, **231**, 688 (1979).
41. W.H. Press and E.T. Vishniac, "Production of New Cosmological Perturbations during the Radiation-Dominated Era," *Nature*, **279**, 137 (1979).
42. W.H. Press and E.T. Vishniac, "Propagation of Adiabatic Cosmological Perturbations through the Era of Matter-Radiation Decoupling," *Astrophys. J.*, **236**, 323 (1980).
43. W.H. Press, "Spontaneous Production of the Zel'dovich Spectrum of Cosmological Fluctuations," *Physica Scripta*, **21**, 702 (1980).
44. W.H. Press, "Man's Size in Terms of Fundamental Constants," *Am. J. Phys.*, **48**, 597 (1980).
45. W.H. Press and E.T. Vishniac, "Tenacious Myths about Cosmological Perturbations Larger than the Horizon Size," *Astrophys. J.*, **239**, 1 (1980).
46. S.L.W. McMillan, B.P. Flannery, and W.H. Press, "Nonlinear Hydrodynamics of Acoustic Instabilities in Diffuse Clouds," *Astrophys. J.*, **240**, 488 (1980).
47. W.H. Press, "Turbulent Erosion of a Stably Stratified Fluid as a Test of Intermittency Models," *J. Fluid Mech.*, **107**, 455 (1981).
48. W.H. Press, "Radiative and Other Effects from Internal Waves in Solar and Stellar Interiors," *Astrophys. J.*, **245**, 286 (1981).
49. W.H. Press and G.B. Rybicki, "Enhancement of Passive Diffusion and Suppression of Heat Flux in a Fluid with Time-Varying Shear," *Astrophys. J.*, **248**, 751 (1981).
50. W.H. Press, "The Age and Structure of the Universe: A Tale of Two Theories," in *Revealing the Universe: Prediction and Proof in Astronomy*, J. Cornell and A.P. Lightman, eds. (MIT Press, 1982).
51. W.H. Press, "Hydrodynamic and Hydromagnetic Phenomena in the Deep Solar Interior," Chapter 4 of *The Physics of the Sun*, Vol. 1, eds. P. Sturrock, T. Holtzer, D. Mihalas, R. Ulrich (Dordrecht: Reidel, 1986), pp. 77–95.

52. W.H. Press, "Galaxies May Be Single Particle Fluctuations from an Early, False-Vacuum Era," in *Cosmology and Particles, Proceedings of the Moriond Astrophysics Meeting 1981*, J. Audouze et al., eds., (Dreux, France: Editions Frontieres, 1981).
53. W.H. Press and M. Davis, "How to Identify and Weigh Virialized Clusters of Galaxies in a Complete Redshift Catalog," *Astrophys. J.*, **259**, 449 (1982).
54. P.S. Marcus, W.H. Press, and S.A. Teukolsky, "Multi-Scale Model Equations for Turbulent Convection and Convective Overshoot," *Astrophys. J.*, **267**, 795 (1983).
55. W.H. Press, "Remarks on Fitting the Cosmic Velocity Field and on 'Best' Tully-Fisher Relations," *Astrophys. J.* (submitted).
56. W.H. Press, "Semiclassical Formulation of Hawking Radiation in an Inflationary Universe," in *Numerical Astrophysics*, J.M. Centrella et al., eds. (Boston: Jones and Bartlett, 1985).
57. R. Brandenberger, R. Kahn, and W.H. Press, "Cosmological Perturbations in the Early Universe," *Phys. Rev. D*, **28**, 1809 (1983).
58. W.H. Press and A.P. Lightman, "Dependence of Macrophysical Phenomena on the Values of the Fundamental Constants," *Phil. Trans. R. Soc. Lond. A*, **310**, 323 (1983).
59. D.N. Spergel and W.H. Press, "Effect of Hypothetical, Weakly-Interacting, Massive Particles on Energy Transport in the Solar Interior," *Astrophys. J.*, **294**, 663 (1985).
60. W.H. Press and D.N. Spergel, "Capture by the Sun of a Galactic Population of Weakly-Interacting, Massive Particles," *Astrophys. J.*, **296**, 679 (1985).
61. L.M. Krauss, K. Freese, D.N. Spergel, and W.H. Press, "Cold Dark Matter Candidates and the Solar Neutrino Problem," *Astrophys. J.*, **299**, 1001 (1985).
62. W.T. Vetterling, S.A. Teukolsky, W.H. Press, and B.P. Flannery, *Numerical Recipes Example Book (FORTRAN)*, 179 pp. + ix (New York: Cambridge University Press, 1985).
63. W.T. Vetterling, S.A. Teukolsky, W.H. Press, and B.P. Flannery, *Numerical Recipes Example Book (Pascal)*, 233 pp. + ix (New York: Cambridge University Press, 1985). Also, Revised Edition (1989).
64. W.H. Press, B.P. Flannery, S.A. Teukolsky, and W.T. Vetterling, *Numerical Recipes: The Art of Scientific Computing*, 818 pp. + xvi (New York: Cambridge University Press, 1986).
65. W.H. Press, "Cosmic Dark Matter and Solar Neutrinos: The Invisible Explains the Missing (or Vice Versa)," in *Cosmogonical Processes*, D. Arnett, C. Hansen, S. Tsuruta, eds. (Utrecht: VNU Science Press, 1986).
66. R.L. Gilliland, J. Faulkner, W.H. Press, and D.N. Spergel, "Solar Models with Energy Transport by Weakly-Interacting Particles," *Astrophys. J.*, **306**, 703 (1986).
67. L.M. Krauss, A.H. Guth, D.N. Spergel, G.B. Field, and W.H. Press, "Inflation and Shadow Matter," *Nature*, **319**, 748 (1986).

68. W.H. Press, "Techniques and Tricks for N-Body Computation," in *The Use of Supercomputers in Stellar Dynamics*, P. Hut and S. McMillan, eds., Springer Lecture Notes in Physics **267** (New York: Springer, 1986).
69. J.N. Bahcall, G.B. Field, and W.H. Press, "Is Neutrino Capture Rate Correlated with Sunspot Number?", *Astrophys. J. (Letters)*, **320**, L69 (1987).
70. J.N. Bahcall, T. Piran, W.H. Press, and D.N. Spergel, "Neutrino Temperatures and Fluxes from the LMC Supernova," *Nature*, **327**, 682 (1987).
71. W.H. Press and C.G. Callan, Jr., "The 'EGASP' Method for Travelling Salesman-Like Resource Allocation Problems," *J. Guidance, Control, & Dynamics*, **11**, 394 (1988).
72. W.H. Press and D.N. Spergel, "Choice of Order and Extrapolation Method in Aarseth-Type N-Body Algorithms," *Astrophys. J.*, **325**, 715 (1988).
73. W.H. Press and D.N. Spergel, "An Introduction to Inflation," in *Dark Matter in the Universe*, Jerusalem Winter School for Theoretical Physics, Volume 4, J. Bahcall, T. Piran, S. Weinberg, eds. (Singapore: World Scientific, 1988), pp. 197–205.
74. W.H. Press and D.N. Spergel, "WIMPs in the Sun and in the Lab," in *Dark Matter in the Universe*, Jerusalem Winter School for Theoretical Physics, Volume 4, J. Bahcall, T. Piran, S. Weinberg, eds. (Singapore: World Scientific, 1988), pp. 206–217.
75. W.H. Press and D.N. Spergel, "An Introduction to Cosmic Strings," in *Dark Matter in the Universe*, Jerusalem Winter School for Theoretical Physics, Volume 4, J. Bahcall, T. Piran, S. Weinberg, eds. (Singapore: World Scientific, 1988), pp. 218–230.
76. J.N. Bahcall, D.N. Spergel, and W.H. Press, "Phenomenological Analysis of Neutrino Emission from SN 1987A," in *Proceedings of Supernova 1987A*, George Mason University, (1988).
77. W.H. Press, B.P. Flannery, S.A. Teukolsky, and W.T. Vetterling, *Numerical Recipes in C: The Art of Scientific Computing*, 735 pp. + xxii (New York: Cambridge University Press, 1988).
78. W.T. Vetterling, S.A. Teukolsky, W.H. Press, and B.P. Flannery, *Numerical Recipes Example Book (C)*, 225 pp. + ix (New York: Cambridge University Press, 1988).
79. D.N. Spergel, W.H. Press, and R.J. Scherrer, "Self-Excited Cosmic String Dynamos," *Nature*, **334**, 682 (1988).
80. W.H. Press and S.A. Teukolsky, "Kolmogorov-Smirnov Test for Two-Dimensional Data," *Computers in Physics*, **2**, No. 4 (Jul/Aug), 74 (1988).
81. W.H. Press and S.A. Teukolsky, "Evaluating Continued Fractions and Computing Exponential Integrals," *Computers in Physics*, **2**, No. 5 (Sep/Oct), 88 (1988).
82. W.H. Press and S.A. Teukolsky, "Search Algorithm for Weak Periodic Signals in Unevenly Spaced Data," *Computers in Physics*, **2**, No. 6 (Nov/Dec), 77 (1988).
83. W.H. Press and S.A. Teukolsky, "Computing Accurate Integrals with the FFT," *Computers in Physics*, **3**, No. 1 (Jan/Feb), 91, (1989).

84. R.J. Scherrer and W.H. Press, "Cosmic String Loop Fragmentation," *Phys. Rev. D*, **39**, 371 (1989).
85. A.P. Lightman and W.H. Press, "Surfaces of Constant Redshift in an Inflationary Universe," *Astrophys. J.*, **337**, 598 (1989).
86. W.H. Press and G.B. Rybicki, "Fast Algorithm for Spectral Analysis of Unevenly Sampled Data," *Astrophys. J.*, **338**, 277 (1989).
87. W.H. Press and D.N. Spergel, "Cosmic Strings: Topological Fossils of the Hot Big Bang," *Physics Today*, **42**, No. 3, 29 (1989).
88. D.N. Spergel, W.H. Press, and R.J. Scherrer, "Electromagnetic Self-Interaction of Superconducting Cosmic Strings," *Phys. Rev. D*, **39**, 379 (1989).
89. W.H. Press and S.A. Teukolsky, "Integrating Stiff Ordinary Differential Equations," *Computers in Physics*, **3**, No. 3 (May/June), 88 (1989).
90. W.H. Press, B.S. Ryden, and D.N. Spergel, "Dynamical Evolution of Domain Walls in an Expanding Universe," *Astrophys. J.*, **347**, 590, (1989).
91. W.H. Press and S.A. Teukolsky, "Cyclic Redundancy Checks for Data Integrity or Identity," *Computers in Physics*, **3**, No. 4 (July/August), 88 (1989).
92. W.H. Press and S.A. Teukolsky, "Fourier Transforms of Real Data in Two and Three Dimensions," *Computers in Physics*, **3**, No. 5 (September/October), 84 (1989).
93. W.H. Press, B.P. Flannery, S.A. Teukolsky, and W.T. Vetterling, *Numerical Recipes in Pascal: The Art of Scientific Computing*, 759 pp. + xxii (New York: Cambridge University Press, 1989).
94. W.H. Press and S.A. Teukolsky, "Quasi (that is, Sub-) Random Sequences," *Computers in Physics*, **3**, No. 6 (November/December), 76 (1989).
95. W. Benz, R.L. Bowers, A.G.W. Cameron, and W.H. Press, "Dynamic Mass Exchange in Doubly Degenerate Binaries, I," *Astrophys. J.*, **348**, 647 (1990).
96. W.H. Press and S.A. Teukolsky, "Elliptic Integrals," *Computers in Physics*, **4**, 92 (1990).
97. W.H. Press, B.S. Ryden, and D.N. Spergel, "Single Mechanism for Generating Large Scale Structure and Providing Dark Missing Matter," *Phys. Rev. Lett.*, **64**, 1084 (1990).
98. B.S. Ryden, W.H. Press, and D.N. Spergel, "The Evolution of Networks of Domain Walls and Cosmic Strings," *Astrophys. J.*, **357**, 293 (1990).
99. W.H. Press and G.R. Farrar, "Recursive Stratified Sampling for Multidimensional Monte Carlo Integration," *Computers in Physics*, **4**, 190 (1990).
100. W.H. Press and S.A. Teukolsky, "Hypergeometric Functions by Direct Path Integration," *Computers in Physics*, **4**, 320 (1990).
101. W.H. Press and S.A. Teukolsky, "Orthogonal Polynomials and Gaussian Quadrature with Nonclassical Weight Functions," *Computers in Physics*, **4**, 423 (1990).

102. R.J. Scherrer, J.M. Quashnock, D.N. Spergel, and W.H. Press, "Properties of Realistic Cosmic String Loops," *Phys. Rev. D*, **42**, 1908 (1990).
103. W.H. Press and S.A. Teukolsky, "Fredholm and Volterra Integral Equations of the Second Kind," *Computers in Physics*, **4**, 554 (1990).
104. W.H. Press and S.A. Teukolsky, "Savitzky-Golay Smoothing Filters," *Computers in Physics*, **4**, 669 (1990).
105. D. Spergel, N. Turok, W.H. Press, and B.S. Ryden, "Global Texture as the Origin of Large Scale Structure: Numerical Simulations of Evolution," *Phys. Rev. D*, **43**, 1038 (1991).
106. W.H. Press and S.A. Teukolsky, "Numerical Calculation of Derivatives," *Computers in Physics*, **5**, 68 (1991).
107. L.L. Smarr and W.H. Press, "Astronomical Computing in the 1990s: The Bahcall Committee Report," *Computers in Physics*, **5**, 180 (1991).
108. J.N. Bahcall and W.H. Press, "Solar-Cycle Modulation of Event Rates in the Chlorine Solar Neutrino Experiment," *Astrophys. J.*, **370**, 730 (1991).
109. W.H. Press and S.A. Teukolsky, "Bessel Functions of Fractional Order," *Computers in Physics*, **5**, 244 (1991).
110. C.F. McKee and W.H. Press, "Theoretical Astrophysics," *Physics Today*, **44**, No. 4, 69 (1991).
111. W.H. Press and S.A. Teukolsky, "Modified Bessel Functions of Fractional Order," *Computers in Physics*, **5**, 330 (1991).
112. W.H. Press and S.A. Teukolsky, "Simulated Annealing Optimization over Continuous Control Spaces," *Computers in Physics*, **5**, 426 (1991).
113. W.H. Press and S.A. Teukolsky, "Multigrid Methods for Boundary Value Problems. I," *Computers in Physics*, **5**, 514 (1991); "Multigrid Methods for Boundary Value Problems. II," *op. cit.*, **5**, 626 (1991);
114. W.H. Press, G.B. Rybicki, and J.N. Hewitt, "The Time Delay of Gravitational Lens 0957+561. I. Methodology, and Analysis of Optical Photometric Data," *Astrophys. J.*, **385**, 404 (1992).
115. W.H. Press, G.B. Rybicki, and J.N. Hewitt, "The Time Delay of Gravitational Lens 0957+561. II. Analysis of Radio Data, and Combined Optical-Radio Analysis," *Astrophys. J.*, **385**, 416 (1992).
116. W.H. Press and S.A. Teukolsky, "Padé Approximants," *Computers in Physics*, **6**, 82 (1992).
117. W.H. Press and S.A. Teukolsky, "Adaptive Stepsize Runge-Kutta Integration," *Computers in Physics*, **6**, 188 (1992).
118. W.H. Press and S.A. Teukolsky, "Fitting Straight Line Data with Errors in Both Coordinates," *Computers in Physics*, **6**, 274 (1992).

119. W.H. Press and S.A. Teukolsky, "Biconjugate Gradient Method for Sparse Linear Systems," *Computers in Physics*, **6**, 274 (1992).
120. W.H. Press, "Wavelet-Based Compression Software for FITS Images," in *Astronomical Data Analysis Software and Systems, I*, D.M. Worrall, C. Biemesderfer, J. Barnes, eds., Astron. Soc. Pac. Conf. Series, **25**, 3, (1992).
121. S.M. Carroll, W.H. Press, and E.L. Turner, "The Cosmological Constant," *Annu. Rev. Astron. Astrophys.*, **30**, 499 (1992).
122. G.B. Rybicki and W.H. Press, "Interpolation, Realization, and Reconstruction of Noisy, Irregularly Sampled Data," *Astrophys. J.*, **398**, 169 (1992).
123. M.H. Freedman and W.H. Press, "Truncation of Wavelet Matrices: Edge Effects and the Reduction of Topological Control," *J. Linear Algebra and Applications*, **234**, 1 (1996).
124. W.H. Press, S.A. Teukolsky, W.T. Vetterling, and B.P. Flannery, *Numerical Recipes in FORTRAN, Second Edition*, 963pp. + xxvi (New York: Cambridge University Press, 1992).
125. W.H. Press, S.A. Teukolsky, W.T. Vetterling, and B.P. Flannery, *Numerical Recipes in C, Second Edition*, 1007pp. + xxvi (New York: Cambridge University Press, 1992).
126. W.H. Press and S.A. Teukolsky, "Portable Random Number Generators," *Computers in Physics*, **6**, 522 (1992).
127. W.H. Press and S.A. Teukolsky, "Fresnel Integrals, Cosine and Sine Integrals," *Computers in Physics*, **6**, 670 (1992).
128. W.H. Press and G.B. Rybicki, "Large-Scale Linear Methods for Interpolation, Realization, and Reconstruction of Noisy, Irregularly Sampled Data," in *Predicting the Future and Understanding the Past: a Comparison of Approaches*, A.S. Weigend and N.A. Gershenfeld, eds. (Reading, MA: Addison-Wesley, 1993).
129. W.H. Press, G.B. Rybicki, and D.P. Schneider, "Properties of High-Redshift Lyman Alpha Clouds. I. Statistical Analysis of the SSG Quasars," *Astrophys. J.*, **414**, 64 (1993).
130. W.H. Press and G.B. Rybicki, "Properties of High-Redshift Lyman Alpha Clouds. II. Statistical Properties of the Clouds," *Astrophys. J.*, **418**, 585 (1993).
131. G.B. Rybicki and W.H. Press, "A Class of Fast Methods for Processing Irregularly Sampled or Otherwise Inhomogeneous One-Dimensional Data," *Phys. Rev. Lett.*, **74**, 1060 (1995).
132. A.G. Riess, W.H. Press, and R.P. Kirshner, "Using SN Ia Light Curve Shapes to Measure The Hubble Constant," *Astrophys. J. (Lett.)*, **438**, L17 (1995).
133. A.G. Riess, W.H. Press, and R.P. Kirshner, "Determining the Motion of the Local Group Using SN Ia Light Curve Shapes," *Astrophys. J. (Lett.)*, **445**, L91 (1995).

134. W.H. Press, "Prognosticating the Future of Gravitational Lenses," in *Astrophysical Applications of Gravitational Lensing*, Proceedings of IAU Symposium 173, C.S. Kochanek and J.N. Hewitt, eds. (Dordrecht: Kluwer, 1996).
135. W.H. Press, "Understanding Data Better with Bayesian and Global Statistical Methods," in *Unsolved Problems in Astrophysics*, J.N. Bahcall and J.P. Ostriker, eds. (Princeton: Princeton University Press, 1997), also in astro-ph/9604126.
136. G.F.R. Ellis, J. Ehlers, S. van den Bergh, R.P. Kirshner, F-K Thielemann, G. Börner, W.H. Press, G. Raffelt, T. Buchert, and C. Hogan, "What Do We Really Know about the Global Structure of the Universe?" in *The Evolution of the Universe*, Dahlem Workshop Report, G. Börner and S. Gottlöber, eds., (Chichester, UK: Wiley, 1997).
137. W.H. Press, "Introduction to Parallel Programming," in *Computational Physics*, Proceedings of the Ninth Physics Summer School at the Australian National University, H.J. Gardner, and C.M. Savage, eds. (Singapore: World Scientific Publishing Co.), 1997.
138. A.G. Riess, W.H. Press, and R.P. Kirshner, "A Precise Distance Indicator: Type Ia Supernova Multicolor Light Curve Shapes," *Astrophys. J.*, **473**, 88 (1996).
139. A.G. Riess, W.H. Press, and R.P. Kirshner, "Is the Dust Obscuring Supernovae in Distant Galaxies the Same as Dust in the Milky Way?" *Astrophys. J.*, **473**, 588 (1996).
140. W.H. Press, S.A. Teukolsky, W.T. Vetterling, B.P. Flannery, *Numerical Recipes in Fortran 90: The Art of Parallel Scientific Computing*, Volume 2 of Fortran Numerical Recipes, Second Edition (New York: Cambridge University Press, 1996).
141. W.H. Press and G.B. Rybicki, "Desperately Seeking Non-Gaussianity: The Light Curve of 0957+561", in *Astronomical Time Series*, Proceedings of the Wise Observatory 25th Anniversary Symposium; D. Maoz, A. Sternberg, and E.M. Leibowitz, eds. (Dordrecht: Kluwer), 1997.
142. W.H. Press and S.A. Teukolsky, "Numerical Recipes: Does This Paradigm Have a Future?," *Computers in Physics*, **11**, 416 (1997).
143. B.C. Bromley, W.H. Press, H. Lin, and R.P. Kirshner, "Spectral Classification and Luminosity Function of Galaxies in the Las Campanas Redshift Survey," *Astrophys. J.*, **505**, 26 (1998).
144. W.H. Press and G.B. Rybicki, "Magnification Ratio of the Fluctuating Light in Gravitational Lens 0957+561," *Astrophys. J.*, **507**, 108 (1998).
145. B.C. Bromley, W.H. Press, H. Lin, R.P. Kirshner, "Density-Dependent Luminosity Functions for Galaxies in the Las Campanas Redshift Survey," astro-ph/ 9805197 (1998).
146. W.H. Press, "Table-Top Model for Black Hole Electromagnetic Instabilities," in *Black Holes and High Energy Astrophysics*, Proceedings of the XLIX Yamada

- Conference in Kyoto, Japan, April, 1998, p. 235 (Tokyo: Universal Academy Press).
147. W.H. Press, S.A. Teukolsky, W.T. Vetterling, and B.P. Flannery, *Numerical Recipes in C++, Second Edition*, 1002pp. + xxviii (New York: Cambridge University Press, 2002).
 148. W.T. Vetterling, S.A. Teukolsky, W.H. Press, and B.P. Flannery, *Numerical Recipes Example Book (C++)*, 228 pp. + ix (New York: Cambridge University Press, 2002).
 149. H. Robins and W.H. Press, "Human microRNAs Target a Functionally Distinct Population of Genes with AT-rich 3' UTRs," *PNAS*, **102**, 15557-15562 (2005).
 150. W.H. Press and H. Robins, "Isochores Exhibit Evidence of Genes Interacting With the Large-Scale Genomic Environment," *Genetics*, **174**, 1029-1040 (2006).
 151. W.H. Press, "Discrete Radon Transform Has an Exact, Fast Inverse and Generalizes to Operations Other Than Sums along Lines," *PNAS*, **103**, 19249–19254 (2006).
 152. W.H. Press, S.A. Teukolsky, W.T. Vetterling, and B.P. Flannery, *Numerical Recipes: The Art of Scientific Computing*, Third Edition, 1235 pp. + xxi (New York: Cambridge University Press, 2007).
 153. W.H. Press, "Strong profiling is not mathematically optimal for discovering rare malfeasors," *PNAS*, **106**, 1716-1719 (2009).
 154. W.H. Press, "Bandit solutions provide unified ethical models for randomized clinical trials and comparative effectiveness research," *PNAS*, **106**, 22387-22392 (2009).
 155. W.H. Press, "To catch a terrorist: can ethnic profiling work?," *Significance*, **7** (4), 164-167 (2010).
 156. W.H. Press and F.J. Dyson, "Iterated Prisoner's Dilemma contains strategies that dominate any evolutionary opponent," *PNAS*, **109** (26), 10409-10413 (2012).
 157. W.H. Press, "Editorial: Investing in Distant Rewards," *Science*, **339**, 627 (2013).
 158. W.H. Press, "Harold Agnew, physicist, atomic bomb Everyman," *PNAS*, **110** (48), 19179-19180 (2013).
 159. W.H. Press, "What's So Special About Science (And How Much Should We Spend on It?)," *Science*, **342** (6160), 817-822 (2013).
 160. D.I. Lou, J.A. Hussmann, R.M. McBee, A. Acevedo, R. Andino, W.H. Press, and S.L. Sawyer, "High-throughput DNA sequencing errors are reduced by orders of magnitude using circle sequencing," *PNAS*, **110** (49), 19872-19877 (2013).
 161. J.A. Hussmann and W.H. Press, "Local Correlations in Codon Preferences Do Not Support a Model of tRNA Recycling," *Cell Reports*, **8**, 1624-1629, September 25 (2014).
 162. J.A. Hussmann, D.I. Lou, S.L. Sawyer, and W.H. Press, "Reply to Schmitt et al.: Data-filtering schemes for avoiding double-counting in circle sequencing," *PNAS*, **111** (16), E1561 (2014).

163. J.A. Hussmann, S. Patchett, A. Johnson, S. Sawyer, W.H. Press. "Understanding biases in ribosome profiling experiments reveals signatures of translation dynamics in yeast", *PLoS Genet* **11** (12), e1005732 (2015).
164. A.C. Stabell, J. Hawkins, M. Li, X. Gao, M. David, W.H. Press, and S.L. Sawyer, "Non-human primate Schlafen11 inhibits production of both host and viral proteins," *PLOS Pathogens*, **12** (12): e1006066, December 27 (2016).
165. C. Jung, J.A. Hawkins, S.K. Jones, Y. Xiao, J.R. Rybarski, K.E. Dillard, J. Hussmann, F.A. Saifuddin, C. Savran, A.D. Ellington, A. Ke, W.H. Press, and I.J. Finkelstein, "Massively Parallel Biophysical Analysis of CRISPR-Cas Complexes on Next Generation Sequencing Chips", *Cell*, **170** (1), pp. 35-47, June 29 (2017).
166. J.A. Hawkins, S.K. Jones, I.J. Finkelstein, W.H. Press. "Indel-correcting DNA barcodes for high-throughput sequencing", *PNAS*, **115** (27), pp. E6217-E6226 (2018).
167. W.H. Press and J.A. Hawkins, "An Indel-Resistant Error-Correcting Code for DNA-Based Information Storage," arXiv:1812.01112 [q-bio.QM], December 3 (2018).
168. J.A. Hawkins, M.E. Kaczmarek, M.A. Müller, C. Drosten, W.H. Press, and S.L. Sawyer, "A metaanalysis of bat phylogenetics and positive selection based on genomes and transcriptomes from 18 species," *PNAS*, **116** (23), 11351-11360, June 4 (2019).
169. W.H. Press, "Bell, Bohm, and qubit: EPR remixed," *American Journal of Physics* **88**, 558 (2020) at <https://doi.org/10.1119/10.0001189> .
170. W.H. Press, "Obituary: Freeman J. Dyson," *Physics Today* **73**, 7, 60, July 1 (2020) at <https://doi.org/10.1063/PT.3.4529> .
171. W.H. Press, J.A. Hawkins, S.K. Jones, J.M. Schaub, and I.J. Finkelstein, "HEDGES Error-Correcting Code for DNA Storage Corrects Indels and Allows Sequence Constraints," *PNAS*, **117** (31) 18489-18496, August 4 (2020) at <https://www.pnas.org/content/117/31/18489> .
172. S.K. Jones, J.A. Hawkins, N.V. Johnson, C. Jung, K. Hu, J.R. Rybarski, J.S. Chen, J.A. Doudna, W.H. Press, and I.J. Finkelstein, "Massively parallel kinetic profiling of natural and engineered CRISPR nucleases," *Nature Biotechnology*, September 7 (2020) at <https://doi.org/10.1038/s41587-020-0646-5> .
173. W.H. Press and J.A. Hawkins, "Likelihood Models for Forensic Genealogy," ArXiv 2010.02985 [q-bio.GN] (October 6, 2020) at <https://arxiv.org/abs/2010.02985> .
174. C. Cassel, S.L. Graham, and W.H. Press, "Comment: It shouldn't be so hard to get the data needed to protect public health," *Modern Healthcare*, August 31, 2020, p. 23, at <https://www.modernhealthcare.com/opinion-editorial/it-shouldnt-be-so-hard-get-data-needed-protect-public-health> .

175. W.H. Press and R.C. Levin, “Editorial: Modeling, post COVID-19,” *Science*, **370** (6520), 1015 (November 27, 2020) at <https://science.sciencemag.org/content/370/6520/1015> .
176. D. Baltimore, R. Conn, W.H. Press, T. Rosenbaum, D.N. Spergel, S.M. Tilghman, H. Varmus, “Should the Endless Frontier of Federal Science be Expanded?”, *AAAS Policy Alert Newsletter* (March, 2021) at <http://arxiv.org/abs/2103.09614> .
177. W.H. Press, “At Lunch with Freeman Dyson,” *Inference: International Review of Science*, **6** (1), May 2021, at <https://inference-review.com/article/at-lunch-with-freeman-dyson> .
178. D.N. Spergel and W.H. Press. “Innovation Is Not a Linear Race, It’s a Dance Between Discovery and Use.” *Issues in Science and Technology* (August 17, 2021), at <https://issues.org/innovation-dance-between-discovery-use-spergel-press/> .
179. W.H. Press and A.K. Finkbeiner. “Freeman J. Dyson, 1923-2020,” 19 pp., *Biographical Memoirs of the National Academy of Sciences* (2021), at <http://www.nasonline.org/publications/biographical-memoirs/memoir-pdfs/dyson-freeman.pdf> .
180. C.F. Chyba, C.K. Cassel, S.L. Graham, J.P. Holdren, E. Penhoet, W.H. Press, M. Savitz, H. Varmus. “Create a COVID-19 Commission,” *Science*, **374** (6570), 932-935 (November 19, 2021) at <https://www.science.org/doi/10.1126/science.abk0029>
181. W.H. Press. “Fast trimer statistics facilitate accurate decoding of large random DNA barcode sets even at large sequencing error rates,” *bioRxiv* 2022.07.02.498575 at <https://doi.org/10.1101/2022.07.02.498575> .
182. W.H. Press, “Optimal Cross-Correlation Estimates from Asynchronous Tick-by-Tick Trading Data,” ArXiv 2303.16153 [q-fin] (March 18, 2023) at <https://arxiv.org/abs/2303.16153> .
183. W.H. Press, “NYSE Price Correlations Are Arbitrageable Over Hours and Predictable Over Years,” ArXiv 2305.08241 [q-fin] (May 14, 2023) at <https://arxiv.org/abs/2305.08241> .