



Edward Witten



Data di nascita 26 agosto 1951

Luogo Baltimore, MD (USA)

Nomina 15 maggio 2006

Disciplina Fisica matematica

Titolo Professore

Principali premi, riconoscimenti e accademie

Accademie: American Academy of Arts and Sciences, 1984; American Physical Society, 1984; National Academy of Sciences, 1988; Membro del Consiglio, Americans for Peace Now, feb. 1992-; American Philosophical Society, 1994; Royal Society, 1998; Académie des sciences, Parigi, 2000. **Onorificenze e Premi:** Borsa di studio MacArthur, 1982; Medaglia Einstein, Einstein Society di Berna, Svizzera, 1985; Premio per le scienze fisiche e matematiche, New York Academy of Sciences, 1985; Medaglia Dirac, International Center for Theoretical Physics, 1985; Premio Alan T. Waterman, National Science Foundation, 1986; Invited Address, International Congress of Mathematicians, 1986 e 2002; Colloquium Lecturer, American Mathematical Society, 1987; Centennial Lecturer, American Mathematical Society, 1988; Medaglia Fields, International Union of Mathematicians, 1990; Medaglia Madison, Princeton University, 1992; Premio New Jersey Pride, 1996; Premio Golden Plate, American Academy of Achievement, 1997; Medaglia Klein, Università di Stoccolma, 1998; Premio Dannie Heineman, American Institute of Physics, 1998; Gibbs Lecturer, American Mathematical Society, 1998; Premio Nemmers per la Matematica, Università Northwestern, 2000; Premio Clay per la ricerca, Clay Mathematics Institute, 2001; Premio Shalom, Americans for Peace Now, 2002; Medaglia nazionale per la Scienza, 2003; Premio Pitagora, Crotone, Italia, 2005; Premio Harvey, Technion, Israele, 2006.

Riassunto dell'attività scientifica

I campi di ricerca del Prof. Witten comprendono la fisica delle particelle elementari, la teoria quantistica dei campi e la teoria delle stringhe. È conosciuto per il suo lavoro sulla scoperta della materia oscura, sul comportamento di teorie di gauge nella quarta dimensione, sull'applicazione della teoria quantistica dei campi alla matematica e per una serie di contributi alla teoria delle stringhe.

Pubblicazioni più recenti

Autore di 250 articoli scientifici. Coautore (con M.B. Green e J.H. Schwarz) di *Superstring Theory*, Volumes 1 and 2, Cambridge University Press; *Janus Configurations, Chern-Simons Couplings, and the theta-Angle in N=4 Super Yang-Mills Theory*, D. Gaiotto, E. Witten, Apr 2008, 66pp.; *Supersymmetric Boundary Conditions in N=4 Super Yang-Mills Theory*, D. Gaiotto, E. Witten, Apr 2008, 82pp.; *Rigid Surface Operators*, S. Gukov, E. Witten, Apr 2008, 89pp.; *Mirror Symmetry, Hitchin's Equations, and Langlands Duality*, E. Witten, Feb 2008, 15pp.; *Conformal Field Theory in Four and Six Dimensions*, E. Witten, Dec 2007, 16pp. Conferenza al simposio intitolato *Topology, Geometry and Quantum Field Theory* (Segalfest), Oxford, England, U.K., 24-29 Jun 2002; *Quantum Gravity Partition Functions in Three Dimensions*, A. Maloney, E. Witten, Dec 2007, 71pp.; *Geometric endoscopy and mirror symmetry*, E. Frenkel, E. Witten, Oct 2007, 130pp.; *Gauge theory and wild ramification*, E. Witten, Oct 2007, 63pp.; *Surface operators in gauge theory*, E. Witten, 2007, 6pp, *Fortsch. Phys.* 55:545-550,2007; *Three-Dimensional Gravity Revisited*, E. Witten, June 2007, 82pp.; *Gauge Theory, Ramification, and the Geometric Langlands Program*, S. Gukov, E. Witten, Dec 2006, 159pp.; *Axions in String Theory*, P. Svrcek, E. Witten, 62pp. *JHEP* 0606:051,2006; *Electric-Magnetic Duality and the Geometric Langlands Program*, A. Kapustin, E. Witten, Apr 2006, 225pp.; *New instanton effects in string theory*, C. Beasley, E. Witten, 50pp. *JHEP* 0602:060,2006; *Two-dimensional models with (0,2) supersymmetry: Perturbative aspects*, E. Witten, Apr 2005, 59pp.; *Non-Abelian localization for Chern-Simons theory*, C.

Beasley, E. Witten, 133pp. *J. Diff. Geom.* 70:183-23,2005; The Hitchin functionals and the topological B-model at one loop, V. Pestun, E. Witten, 33pp. *Lett. Math. Phys.* 74:21-51,2005; Direct proof of tree-level recursion relation in Yang-Mills theory, R. Britto, F. Cachazo, B. Feng, E. Witten, Jan 2005, 8pp. *Phys. Rev. Lett.* 94:181602,2005; Gauge theory amplitudes in twistor space and holomorphic anomaly, F. Cachazo, P. Svrcek, E. Witten, Sep 2004, 8pp. *JHEP* 0410:077,2004; New instanton effects in supersymmetric QCD, C. Beasley, E. Witten, 43pp. *JHEP* 0501:056,2005; Supersymmetry and other scenarios, E. Witten, 2004, 6pp. *Int. J. Mod. Phys. A* 19:1259-1264,2004; Twistor space structure of one-loop amplitudes in gauge theory, F. Cachazo, P. Svrcek, E. Witten, June 2004, 42pp. *JHEP* 0410:074,2004; Conformal super-gravity in twistor-string theory, N. Berkovits, E. Witten, 43pp. *JHEP* 0408:009,2004; Parity invariance for strings in twistor space, E. Witten, Mar 2004, 17pp. *Adv. Theor. Math. Phys.* 8:779-796,2004; MHV vertices and tree amplitudes in gauge theory, F. Cachazo, P. Svrcek, E. Witten, Mar 2004, 27pp. *JHEP* 0409:006,2004; Yangian symmetry in $D = 4$ superconformal Yang-Mills theory, L. Dolan, C.R. Nappi, E. Witten, Jan 2004, 16pp. Cincinnati 2003, *Quantum theory and symmetries* 300-15; The past and future of string theory, E. Witten, Jan 2002, Cambridge 2002, *The future of theoretical physics and cosmology* 455-62; Perturbative gauge theory as a string theory in twistor space, E. Witten, Dec 2003, 97pp. *Commun. Math. Phys.* 252:189-258,2004; A Relation between approaches to integrability in superconformal Yang-Mills theory, L. Dolan, C.R. Nappi, E. Witten, Aug 2003, 19pp. *JHEP* 0310:017,2003; $SL(2, \mathbb{Z})$ action on three-dimensional conformal field theories with Abelian symmetry, E. Witten, Jul 2003, 23pp. In Shifman, M. (ed.) *et al.: From fields to strings*, vol. 2 1173-1200; Residues and world sheet instantons, C. Beasley, E. Witten, 48pp. *JHEP* 0310:065,2003; Proton decay in intersecting D-brane models, I.R. Klebanov, E. Witten. PUPT-2080, Apr 2003, 21pp. *Nucl. Phys. B* 664:3-20,2003; Chiral rings and phases of supersymmetric gauge theories, F. Cachazo, N. Seiberg, E. Witten, Mar 2003, 55pp. *JHEP* 0304:018,2003; Phases of $N=1$ supersymmetric gauge theories and matrices, F. Cachazo, N. Seiberg, E. Witten, Dec 2002, 68pp. *JHEP* 0302:042,2003; Unification scale, proton decay, and manifolds of $G(2)$ holonomy, T. Friedmann, E. Witten, Nov 2002, 39pp. *Adv. Theor. Math. Phys.* 7:577-617,2003; Chiral rings and anomalies in supersymmetric gauge theory, F. Cachazo, M.R. Douglas, N. Seiberg, E. Witten, 67pp. *JHEP* 0212:071,2002; Noncommutative Yang-Mills theory and string theory, E. Witten, 1999, *Surveys Diff. Geom.* 7:685-696,1999. Also in Cambridge 1999, *Surveys in differential geometry* 685-96; String theory, E. Witten, 6pp. *Proceedings of APS/DPF/DPB Summer Study on the Future of Particle Physics* (Snowmass 2001), Snowmass, Colorado, 30 Jun-21 Jul 2001, pp 337; Quest for unification, E. Witten, Jul 2002, 9pp. Hamburg 2002, *Supersymmetry and unification of fundamental interactions*, vol. 1 604-10; M theory and quantum mechanics, E. Witten, 1998, *Nucl. Phys. Proc. Suppl.* 62:463-466,1998. Also in Philadelphia 1997, *Supersymmetries in physics* 463-6; Hunting the Higgs, G. Kane, E. Witten, 2002, *New Sci.* 173N2336:28-32,2002; The mass question, E. Witten, 2002, *Nature* 415:969-971,2002; A Note on fluxes and superpotentials in M theory compactifications on manifolds of $G(2)$ holonomy, Chris Beasley, E. Witten, 16pp. *JHEP* 0207:046,2002; A Gravity dual of the chiral anomaly, I.R. Klebanov, P. Ouyang, E. Witten, 15pp. *Phys. Rev. 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Witten, June 2001, 19pp. Prepared for *International School of Subnuclear Physics: 39th Course: New Fields and Strings in Subnuclear Physics*, Erice, Italy, 29 Aug-7 Sep 2001; Anomaly analysis of brane-anti-brane systems, J.H. Schwarz, E. Witten, 28pp. *JHEP* 0103:032,2001; Quantum Yang-Mills theory, A.M. Jaffe, E. Witten, 2000, 15pp. *Clay Mathematics Institute Millenium Prize problem*; BPS Bound states of D0-D6 and D0-D8 systems in a B field, E. Witten, Dec 2000, 16pp. *JHEP* 0204:012,2002; The Hagedorn transition in noncommutative open string theory, S.S. Gubser, S. Gukov, I.R. Klebanov, M. Rangamani, E. Witten, 22pp. *J. Math. Phys.* 42:2749-2764,2001; Overview of K theory applied to strings, E. Witten, Jul 2000, 17pp. *Int. J. Mod. Phys. A* 16:693-706,2001. Also in Ann Arbor 2000, *Strings* 53-66; Lepton number and neutrino masses, E. Witten, Jun 2000, 5pp. *Nucl. Phys. Proc. Suppl.* 91:3-8,2001. 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