



Prof. Juan Maldacena

Professor



Most important awards, prizes and academies

2019, Galileo Galilei Medal; 2018, Lorentz Medal; 2018, Richard E. Prange Prize; 2018, Einstein Medal; 2012, Milner Foundation Fundamental Physics Prize; 2012, I.Ya.Pomeranchuk Prize; 2008, ICTP Dirac Medal; 2007, Dannie Heineman Prize for Mathematical Physics; 2004, Distinguished Lecturer at Stanford University; 2004, APS Edward A. Bouchet Award; 2002, Pius XI Medal; 2001, Xanthopoulos Prize in General Relativity; 2000, Sackler Prize in Physics; 1999, UNESCO Husein Prize for Young Scientists; 1999, MacArthur Fellowship; 1998, Packard Fellowship in Science and Engineering; 1998, Sloan Fellowship. Professor Maldacena is a member of the American Physical Society and the American Academy of Arts and Sciences.

Summary of scientific research

Professor Maldacena has worked on quantum gravity and string theory, searching for a consistent quantum mechanical description of spacetime. He studied quantum aspects of black holes according to string theory. He proposed an equivalence between quantum hyperbolic spacetimes and quantum field theories living on their boundaries. This has provided a complete quantum description of black holes as seen from the outside. In addition, this relation has been used by various groups to model strongly interacting systems of quantum particles. He has also worked on some aspects of cosmological perturbations in the theory of inflation.

Main publications

Cool horizons for entangled black holes, Juan Maldacena (Princeton, Inst. Advanced Study), Leonard Susskind (Stanford U., ITP and Stanford U., Phys. Dept.) Published in: *Fortsch. Phys.* 61 (2013) 781-811, e-Print: [1306.0533](#); [Replica Wormholes and the Entropy of Hawking Radiation](#), Ahmed Almheiri (Princeton, Inst. Advanced Study), Thomas Hartman (Cornell U., Phys. Dept.), Juan Maldacena (Princeton, Inst. Advanced Study), Edgar Shaghoulian (Cornell U., Phys. Dept.), Amirhossein Tajdini (Cornell U., Phys. Dept.) Nov 27, 2019, Published in: *JHEP* 05 (2020) 013, e-Print: [1911.12333](#); [Remarks on the Sachdev-Ye-Kitaev model](#), Juan Maldacena, Princeton, Inst. Advanced Study, Douglas Stanford (Princeton, Inst. Advanced Study) Apr 26, 2016, Published in: *Phys.Rev.D* 94 (2016) 10, 106002, e-Print: [1604.07818](#); [Cosmological Collider Physics](#), Nima Arkani-Hamed (Princeton, Inst. Advanced Study), Juan Maldacena (Princeton, Inst. Advanced Study), Mar 27, 2015, e-Print: [1503.08043](#), Nima Arkani-Hamed (Princeton, Inst. Advanced Study), Juan Maldacena (Princeton, Inst. Advanced Study) Mar 27, 2015, e-Print: [1503.08043](#) [Generalized gravitational entropy](#), Aitor Lewkowycz (Princeton U.), Juan Maldacena (Princeton, Inst. Advanced Study), Apr 17, 2013, Published in: *JHEP* 08 (2013) 090, e-Print: [1304.4926](#); N=6 superconformal Chern-Simons-matter theories, M2-branes and their gravity duals, Ofer Aharony, Oren Bergman, Daniel Louis Jafferis, Juan Maldacena. Jun 2008. 41 pp. Published in *JHEP* 0810 (2008) 091, WIS-12-08-JUN-DPP, DOI: 10.1088/1126-6708/2008/10/091; Towards inflation in string theory, Shamit Kachru, Renata Kallosh, Andrei D. Linde, Juan Martin Maldacena, Liam P. McAllister, Sandip P. Trivedi. Aug 2003. 41 pp. Published in JCAP 0310 (2003) 013 SLAC-PUB-9669, SU-ITP-03-18, TIFR-TH-03-06, DOI: 10.1088/1475-7516/2003/10/013; Non-Gaussian features of primordial fluctuations in single field inflationary models, Juan Martin Maldacena. Oct 2002. 38 pp. Published in *JHEP* 0305 (2003) 013; Strings in flat space and pp waves from N=4 superYang-Mills, David Eliecer Berenstein, Juan Martin Maldacena, Horatiu Stefan Nastase. Feb 2002. 36 pp. Published in *JHEP* 0204 (2002) 013; Gluon scattering amplitudes at strong coupling, Luis F. Alday, Juan Martin Maldacena. May 2007. 29 pp. Published in *JHEP* 0706 (2007) 064 SPIN-07-16, ITP-UU-07-24, DOI: 10.1088/1126-6708/2007/06/064; Wilson loops in large N field theories, Juan Martin Maldacena. Mar 1998. 11 pp. Published in *Phys.Rev.Lett.* 80 (1998) 4859-4862, HUTP-98-A014, DOI: 10.1103/PhysRevLett.80.4859; Supergravity and the large N limit of theories with sixteen supercharges, Nissan Itzhaki, Juan Martin Maldacena, Jacob Sonnenschein, Shimon Yankielowicz. Feb 1998. 24 pp. Published in *Phys.Rev. D* 58 (1998) 046004 TAUP-2474-98, HUTP-98-A003, DOI: 10.1103/PhysRevD.58.046004; The Large N limit of superconformal field theories and supergravity, Juan Martin Maldacena. Nov 1997. 19 pp. Published in *Adv.Theor.Math.Phys.* 2 (1998) 231-252 HUTP-98-A097; D-brane approach to black hole quantum mechanics, Curtis G. Callan, Juan Martin Maldacena. Feb 1996. 18 pp. Published in *Nucl.Phys. B* 472 (1996) 591-610 PUPT-1591, DOI: 10.1016/0550-3213(96)00225-8.