

CURRICULUM VITAE

TEJINDER PAL SINGH

CONTACT

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POSITION: Professor, Tata Institute of Fundamental Research, Mumbai

PAST POSITIONS HELD AT THE INSTITUTE:

1st August, 1984 - 31st July, 1989: Graduate Student
1st August, 1989 - 31st January, 1991: Research Associate
1st February, 1991 - 31st January, 1997: Fellow
1st February, 1997 - 31st July, 2001: Reader
1st August, 2001 – 31 December, 2008: Associate Professor
1st January 2009 - Present: Professor

DATE OF BIRTH: July 23, 1962

ACADEMIC QUALIFICATIONS:

M. S. Physics (1984) IIT, Delhi
Ph. D. (Physics) (1989) T. I. F. R., Mumbai
Post-doctoral Fellow, ICTP Trieste, 1989-90

RESEARCH INTERESTS:

Quantum Gravity; Quantum Measurement Problem and Foundations of Quantum Mechanics;
Gravitation Theories with Torsion; Cosmology - The Origin of Cosmic Acceleration and Dark
Energy, The Cosmological Constant Problem and the Large Scale Structure of the Universe;
Gravitational Collapse and Cosmic Censorship.

SUPERVISION OF Ph. D STUDENTS

Sukratu Barve: 1996-2001
Rakesh Tibrewala: 2003 -2009
Kinjalk Lochan : 2008 -2013
Sayantani Bera : 2014 – 2018
Srimanta Banerjee: 2015 - 2020

Sashideep Gutti: 2002 -2008
Aseem Paranjape: 2004 – 2009
Priti Mishra : 2010-2014
Shreya Banerjee: 2014 - 2018

TEACHING:

TIFR Graduate School

- Core Course : Statistical Mechanics (2009) 30 Lectures
- Reading Course on General Relativity and Cosmology (2004)
- Core Course: Classical Mechanics (2003) 35 Lectures
- Reading Course on General Relativity (2003)
- Core Course: Statistical Mechanics (2001) 35 Lectures
- Core Course: Classical Electrodynamics (1998) 35 Lectures
- Dept. Course: Astronomy and Astrophysics (1995) 15 Lectures
- Core Course: Classical Electrodynamics (1993) 35 Lectures
- Topical Course: General Relativity and Cosmology (2013)

Outside TIFR (2000 onwards)

- Two lectures on Cosmology at the Workshop on Cosmology for College Teachers, Ruia College, Mumbai, 17-19 November, 2004
- Ten lectures on General Relativity and Gravitational Collapse, St. Xaviers College, Mumbai, Jan. - March, 2003
- Three lectures on Basics of Cosmology, Extramural Course on Astronomy and Astrophysics, Mumbai University, March, 2003
- Four lectures on Gravitational Collapse, Yukawa Institute for Theoretical Physics, Kyoto, August-September, 2000.

AWARDS & DISTINCTIONS:

- Honorable mention in the Gravity Research Foundation Essay Contest 2021 for the essay 'Quantum theory without classical time: octonions, and a theoretical derivation of the fine structure constant $1/137$ '
- Honorable mention in the Gravity Research Foundation Essay Contest 2020 for the essay 'Nature does not play dice on the Planck scale', arXiv:2005.06427
- Honorable mention in the Gravity Research Foundation Essay Contest 2019 for the essay 'Quantum gravity as an emergent phenomenon' [with Shounak De and Abhinav Varma] arXiv:1903.11066
- Fourth place prize in the FQXi essay contest 'What is fundamental?' (2018) for the essay 'Things, laws, and the human mind'
- Honorable mention in the Gravity Research Foundation Essay Contest 2018 for the essay 'A duality between curvature and torsion' [with Swanand Khanapurkar] arXiv:1804.00167
- Honorable mention in the Gravity Research Foundation Essay Contest 2017 for the essay 'A new length scale for quantum gravity' [arXiv:1705.00747]
- Honorable mention in the Gravity Research Foundation Essay Contest 2016 for the essay 'Quantum non-locality and the end of classical space-time', with Shreya Banerjee and Sayantani Bera [arXiv: 1605.06022] to appear in Int. J. Mod. Phys.
- Special prize for Creative Thinking in the FQXi Essay Contest 2015, for the essay 'Cognitive science and the connection between physics and mathematics' [jointly with Anshu Gupta Mujumdar]

- Guest Editor, Current Science special issue on 100 Years of General Relativity Vol. 109 (2015)
- Honorable mention in the Gravity Research Foundation Essay Contest 2015 for the essay 'Cosmological constant, quantum measurement, and the problem of time'; with Shreya Banerjee and Sayantani Bera
- Third prize in the FQXi essay contest 2014 'How should humanity steer the future?'
- Honorable mention in the Gravity Research Foundation Essay Contest 2014 for the essay 'How the quantum emerges from gravity?' with Anushrut Sharma
- Second prize in the essay contest (2013) 'It from Bit, or Bit from It' conducted by the Foundational Questions Institute, for the essay 'Information and the foundations of quantum theory' [jointly with Angelo Bassi and Saikat Ghosh]
- Fourth prize in the essay contest (2012) 'Which of our fundamental assumptions are wrong' conducted by the Foundational Questions Institute, for the essay 'Is quantum linear superposition an exact principle of nature?' [Jointly with Angelo Bassi and Hendrik Ulbricht]
- Honorable mention in the Gravity Research Foundation essay contest 2012 for the essay 'Modified gravity as a common cause for cosmic acceleration and flat galaxy rotation curves' with Priti Mishra.
- Fourth prize in the Essay Contest [2011] 'Is reality digital or analog?' conducted by the Foundational Questions Institute (USA) for the essay 'The three and a half layers of dynamics : analog, digital, semi-digital, analog'.
- John Templeton Foundation grant for Research on the Quantum Measurement Problem [2011-2013] (with Angelo Bassi, Hendrik Ulbricht, Suratna Das, Kinjalk Lochan and Cenalo Vaz).
- John Templeton Foundation grant for Research on the Quantum Measurement Problem [2013-2016] (with Angelo Bassi and Hendrik Ulbricht)
- Honorable mention in the Gravity Research Foundation Essay Competition (2010) for the essay "The connection between 'the emergence of time in quantum gravity' and 'dynamical collapse of the wave-function in quantum mechanics' [arXiv:1005.2682]
- Fourth Prize in the Essay Contest [2009] 'What is ultimately possible in physics?' conducted by the Foundational Questions Institute (USA) for the essay 'Quantum theory, gravity and the standard model of particle physics : using the hints of today to build the final theory of tomorrow' [<http://fqxi.org/community/essay/winners/2009.1>]
- Elected as member of the Foundational Questions Institute (USA) [<http://fqxi.org>]
- Second Prize in the Gravity Research Foundation Essay Contest (2008) Essay Contest for the essay "Noncommutative gravity, a no-strings attached quantum-classical duality, and the cosmological constant puzzle". [Gen. Rel. Grav. 40, 2037 (2008)] [arXiv:gr-qc/0805.2124]
- Fourth Prize (along with Cenalo Vaz) in the Gravity Research Foundation Essay Contest (2004) for the essay: "The quantum gravitational black hole is neither black nor white" [Intl. Jour. Mod. Phys. D13, 2369 (2004)] [arXiv:gr-qc/0405087]
- Honorable mention in the Gravity Research Foundation Essay Contest (2006) for the essay "String theory, quantum mechanics, and noncommutative geometry: a new perspective on the gravitational dynamics of D0-branes" [Intl. Jour. Mod. Phys. D15, 2153 (2006)] [hep-th/ 0605112]

- Honorable mention in the Gravity Research Foundation Essay Contest (2007) for the essay “The inevitable nonlinearity of quantum gravity falsifies the many-worlds interpretation of quantum mechanics”. [Int. J. Mod. Phys. D17, 611 (2008)] [arXiv: 0705.2357 [gr-qc]]
- Member, SERC Programme Advisory Committee on ‘Particle Physics, Nuclear Physics and Astrophysics’ [2004-2007].
- Ex-Member, Council of the Indian Association for General Relativity and Gravitation.
- Third Prize in Gravity Research Foundation Essay Contest (1998) for the essay ‘Gamma ray bursts and quantum cosmic censorship’ [arXiv: gr-qc/9805062] Gen.Rel.Grav. 30 (1998) 1563
- Center for Excellence Scholar, Yukawa Institute for Theoretical Physics, Kyoto 1st August – 31st October, 2000.
- German Science Foundation Project Award (2006-2007)
- CBSE HSC Examination (1977) : All-India Rank 11
- CBSE Senior Secondary Examination [1979] : All-India Rank 3
- IIT Delhi Silver Medal [1984]
- Referee for the journals:

Classical and Quantum Gravity;
 General Relativity and Gravitation;
 Pramana;
 International Journal of Modern Physics D;
 Journal of Astronomy and Astrophysics;
 Journal of Cosmology and Astroparticle Physics (JCAP);
 Physica A;
 Journal of Physics A;
 Physical Review;
 Foundations of Physics.

MEMBERSHIP OF COMMITTEES:

- Chairperson, Scientific Organising Committee, 9th International Conference on Gravitation and Cosmology, Dec. 14-18, 2019 IISER Mohali.
- Co-organizer, ICTS Program on ‘Fundamental Problems of Quantum Physics’, Bangalore, Nov. 21-Dec.10, 2016.
- Member, Scientific Organizing Committee, VIIIth International Conference on Gravitation and Cosmology, Dec. 2015, IISER Mohali, India
- Chairperson, Local Organizing Committee, VIIth International Conference on Gravitation and Cosmology, Dec. 2011, Goa, India
- Member, Scientific Organizing Committee, International Conference on Gravitation and Cosmology, December 2007, Pune (India).

- Chairperson, Scientific Organizing Committee, 24th IAGRG Meeting, Delhi, February, 2007.
- Member, National Organizing Committee, PASCOS, TIFR, Mumbai, January, 2003.
- Convener, TIFR Website Committee, 2001-2004.
- Member, Science Popularisation and Public Outreach Committee, TIFR. (2004-2006)

STUDY LEAVE DURING THE SERVICE OF THE INSTITUTE:

- University of Southampton; Aug.-Sep. 2012 and Sep. 2014
- University of Trieste, Italy, June, 2011
- Institute for Theoretical Physics, University of Cologne, Germany, September-October, 2006 and May-June, 2007.
- Yukawa Institute for Theoretical Physics, Kyoto, Japan, 1st August to 31st October, 2000
- ICTP, Trieste, October, 1989 to September, 1990

EXTERNALLY FUNDED RESEARCH PROJECTS:

- The Quantum Measurement Problem, John Templeton Foundation [2011-2013] and [2013-2016] [with Prof. Angelo Bassi (Trieste) and Prof. Hendrik Ulbricht (Southampton)]
- Quantum Gravitational Collapse, T. P. Singh and Claus Kiefer; 2006-07, German Science Foundation DFG/446; 2006-07
- Classical and quantum physics in strong gravitational fields; T. P. Singh, Cenalo Vaz and Louis Witten; FCT, Portugal, 2000-2002.

TALKS GIVEN AT NATIONAL AND INTERNATIONAL CONFERENCES: (2000 onwards)

NATIONAL CONFERENCES

- Quantum gravity, octonions, and the fine structure constant $1/137$, at the 1st q(GAME) meeting - Quantum gravity and astrophysics meeting, Delhi University, April 12-13, 2021 [Online]
- Trace dynamics and division algebras: towards quantum gravity and unification, 30th Meeting of the Indian Association for General Relativity and Gravitation, IIT Gandhinagar, December 19-20, 2020 (Virtual Conference).
- Schrodinger's cat, and Einstein's space-time, in the 21st century, NCFMP2020, ADAMAS University, 2020
- 100 Years of General Relativity; Current Trends in Physics, BHU Varanasi, January, 2016.

- Why is the observed cosmological constant nonzero, yet so small? FTAG VII, Indian Institute of Advanced Studies, Simla, November, 2008
- Quantum Gravity and Quantum Measurement, FTAG VI, HRI, Allahabad, November, 2007.
- Quantum Gravity and Quantum Measurement, Workshop Session on Quantum Gravity at the 24th IAGRG Meeting, Delhi, February, 2007.
- Why was Einstein Dissatisfied with Quantum Mechanics, at the Conference on Einstein's Theories, Mumbai, January, 2005.
- Quantum Mechanics and the Non-commutative Hamilton-Jacobi equation, Workshop Session on Quantum Gravity at the 23rd IAGRG Meeting, Jaipur, December, 2004.
- Quantum Gravitational Collapse, Plenary Talk at the Conference on Perspectives in Theoretical Physics and Cosmology, Ahmedabad, April, 2004.
- Quantum Mechanics without Spacetime, at the 22nd IAGRG Meeting, Pune, December 2002.

INTERNATIONAL CONFERENCES

- Fine structure constant $1/137$ from the octonions, Perimeter Institute conference on 'Octonions and the standard model', May 10, 2021 [Online]
- Towards the unification of the four fundamental forces, invited talk at RDCM-2021 'Recent Developments in Cosmology and Modified Gravity' at BITS Pilani, Hyderabad Campus, March 9-11, 2021 [Online]
<https://www.tifr.res.in/~tpsingh/BITSHYDRDCM2021.pdf>
- Quantum gravity theories, and quantum foundations; 9th International Conference on Gravitation and Cosmology, ICGC2019, IISER Mohali, Dec. 10-13, 2019.
- Space-time from collapse of the wave function, Conference on 'The Universe as a quantum lab', APC Paris, 19-21 September, 2018
- Wave function collapse, non-locality, and space-time structure, Conference on 'Aspects of gravitation and cosmology', IUCAA, Pune (March, 2017)
- Trace dynamics, ICTS program on Fundamental problems of quantum physics, ICTS, Bangalore, December, 2016
- Models of wave-function collapse, underlying theories, and experimental tests; International School and Conference on Quantum Information; IOP Bhubaneswar, February, 2016.
- Ricci identities, torsion, and the Dirac equation; ICGC2015, IISER Mohali, Dec. 14-18, 2015
- Role of gravity in the collapse of the wave function: a survey of ideas; DICE 2014 - space-time, matter, quantum mechanics; Castiglione, Italy, September, 2014
- Gravity and the collapse of the wave-function; Conference on Fundamental Problems in Quantum Physics, Weizmann Institute, Israel, March, 2014
- Statistical thermodynamics of noncommutative special relativity, and quantum field theory with time as an operator, MG13, Stockholm, July, 2012.

- Modified gravity as a common origin for cosmic acceleration and flat galaxy rotation curves, MG13, Stockholm, July, 2012.
- Quantum theory without time, and the measurement problem; Quantum Malta 2012, Malta, April 2012.
- Quantum mechanics without time and the measurement problem; John Templeton Foundation Project Review Meeting on 'Quantum Physics and the Nature of Reality', International Academy Traunkirchen, Austria, July, 2011.
- The effect of cosmic inhomogeneities on the average cosmological dynamics; Conference on the role of Inhomogeneities in Cosmology, University of Jyväskylä, Finland, August, 2011.
- The effect of cosmic inhomogeneities on the average cosmological dynamics, Conference on Dark Energy, Mexico City, November, 2010.
- Averaging of cosmological inhomogeneities, The Invisible Universe, Paris, July, 2009
- A quantum-classical duality and the cosmological constant problem, The Invisible Universe, Paris, July, 2009
- Quantum measurement and quantum gravity, 2nd Meeting of the Foundational Questions Institute, Azores, Portugal, July, 2009
- Quantum measurement and quantum gravity : many-worlds or collapse of the wave-function? DICE, 2008, Castiglione, Italy, September, 2008
- Noncommutative gravity and the cosmological constant problem, Workshop on noncommutative geometry and quantum field theory, IMSC, Chennai, December, 2008
- Quantum Gravity and Quantum Measurement, at the meeting Himalayan Relativity Dialogue, Mirik, India, April, 2007; and Workshop Session on Quantum Gravity, ICGC07, IUCAA, Pune, December, 2007.
- Quantum Mechanics and Non-commutative Geometry, Conference on Black Holes, Singularities and Cosmic Censorship, TIFR, Mumbai, March, 2006.
- Quantum Mechanics and Noncommutative Geometry, Conference on Time in Physics, Wildbad Kreuth, Germany, October, 2006.
- Quantum Mechanics without Spacetime: A case for Noncommutative Geometry, at the Conference 'Quantum Theory and Symmetries – IV', Varna, Bulgaria, August, 2005.
- Exact Quantum State of Collapse and Hawking Radiation, Talk in the Workshop Session on Quantum Gravity, GR-17, Dublin, July 2004.
- Quantum Mechanics without Spacetime, at the Workshop on Noncommutative Geometry, Chennai, January, 2003.
- Mach's Principle, quantum mechanics and noncommutative geometry; Workshop on Mach's Principle; IIT, Kharapur, February, 2002.
- Naked Singularities and Quantum Gravity, Workshop Session on Quantum Fields in Curved Space, GR-16, Durban, South Africa, July, 2001.

- Gravitational Collapse, Black Holes and Naked Singularities; Plenary Talk at the Annual Meeting of the Japanese Physical Society, Niigata, Japan, September, 2000.
- Comparing Quantum Black Holes and Naked Singularities, Plenary Talk at the Tenth Annual Meeting of the Japanese Society on General Relativity and Gravitation, Osaka, Japan, September, 2000.

LECTURES GIVEN OUTSIDE THE INSTITUTE: (2000 onwards)

- Towards the unification of the four fundamental forces, TIFR Colloquium, February 10, 2021
<https://youtu.be/Kec9qRpUYbU>
- Trace dynamics and division algebras: towards quantum gravity and unification, Webinar, Albert Einstein Institute, Potsdam, September 21, 2020
- Quantum mechanics and gravity: Introducing the Aikyon; Webinar, INO Lecture Series, June 12, 2020. Webinar, DIT Dehradun, July 3, 2020
- Spontaneous quantum gravity; Webinar, ITP Cologne, May 26, 2020.
- The theory of spontaneous quantum gravity, IACS Kolkata, February 6, 2020
- Schrodinger's cat, and Einstein's space-time, in the 21st century, IISER Kolkata, February 5, 2020; DIT Dehradun, February 2020.
- Schrodinger's cat, Einstein's space-time; BITS Pilani Goa Campus, November 10, 2019
- From quantum foundations to quantum gravity; University of Nottingham 25th September, 2019; University College London 27th September 2019.
- Schrodinger's cat, black holes, and the origin of space-time; Colloquium at BITS Pilani, Hyderabad Campus, April 12, 2019; Colloquium at TIFR-Hyderabad, August 22, 2019.
- Space-time from collapse of the wave function, University of Southampton, 27 September, 2018
- Is quantum theory exact, or approximate? IIT Kanpur colloquium, November 2012; University of Southampton, September, 2014; University College London, September, 2014; NCRA, TIFR, Pune Colloquium March 2016; IISER Mohali Colloquium February, 2018; ITP Cologne Colloquium. April 2018.
- Does gravity have a role in wave-function collapse? IIT Kanpur, August 2014
- Scale relativity and quantum theory, University of Trieste, May, 2013
- The quantum measurement problem, University of Southampton, September, 2012
- Quantum mechanics without time and the measurement problem; University of Trieste, June, 2011; University of Turku, Finland, August, 2011.
- Quantum Mechanics : an unfinished story : Colloquium, Centre for Basic Sciences, Mumbai University, January, 2011
- The averaging problem in cosmology, Institute of Cosmology and Gravitation, Portsmouth, UK, November, 2010

- Trace Dynamics and the quantum measurement problem, King's College, London, November, 2010.
- Linear quantum theory : exact or approximate?, Delhi University, Nov. 2009
- Quantum gravity and quantum measurement : Physics Colloquium, Institute of Physics, Bhubaneswar, March, 2008
- The origin of cosmic acceleration : dark energy or cosmic inhomogeneities? University of Bielefeld, Germany; June, 2007
- The end state of gravitational collapse : black hole or naked singularity? Institute for Theoretical Physics, University of Cologne, Germany; May, 2007.
- Dark energy, cosmological inhomogeneities and averaging; Institute for Theoretical Physics, University of Cologne, Germany; September, 2006.
- Quantum Gravitational Collapse; Max Planck Institute for Gravitational Physics, Golm, Germany; October, 2004.
- Quantum Gravitational Collapse; Institute for Theoretical Physics, University of Cologne, Germany; October, 2004.
- Quantum mechanics without spacetime; Raman Research Institute; Bangalore, May, 2004.
- Quantum gravitational collapse, Raman Research Institute,; Bangalore, May, 2004.
- Quantum aspects of gravitational collapse; IUCAA, Pune, October, 2002.
- Quantum mechanics without spacetime; Institute for Theoretical Physics, University of Cologne, Germany; July, 2002.
- Comparing quantum black holes and naked singularities; Waseda University, Tokyo, October, 2000.
- Gravitational collapse, black holes and naked singularities; Tokyo Institute of Technology, October, 2000.

PUBLIC OUTREACH & SCIENCE POPULARISATION: (2000 onwards)

POPULAR ARTICLES

- The pollen and the electron: a study in randomness, Priyanka Giri and Tejinder P. Singh, <https://fqxi.org/community/forum/topic/3503>
- Space-time from collapse of the wave-function, T. P. Singh, FQXi Blog, <https://fqxi.org/community/forum/topic/3247>
- Things, laws, and the human mind; T. P. Singh; <https://fqxi.org/community/forum/topic/3057>
- Cognitive science and the connection between physics and mathematics; Anshu Gupta Mujumdar and T. P. Singh; [arXiv:1506.03788] <http://fqxi.org/community/essay/winners/2015.1>

- Information and the foundations of quantum theory; Angelo Bassi, Saikat Ghosh and T. P. Singh; [arXiv:1310.8600] <http://fqxi.org/community/essay/winners/2013.1>
- Enlightenment is not for the Buddha alone; T. P. Singh; <http://fqxi.org/community/essay/winners/2013.1>
- Is quantum linear superposition an exact principle of nature? Angelo Bassi, T. P. Singh and Hendrik Ulbricht; [arXiv:1212.0135] <http://fqxi.org/community/essay/winners/2012.1>
- Noncommutative gravity, a quantum classical duality, and the cosmological constant puzzle ; [arXiv: <http://www.2physics.com/2008/06/evolution-of-system-in-quantum.html>]
- Special Relativity for the School-Going Child, [arXiv: physics/0411219], published by TIFR in 'A Revolution in Physics – Einstein's 1905 Discoveries Made Simple' (2005).
- Quantum theory, gravity, and the standard model of particle physics : using the hints of today to build the final theory of tomorrow [arXiv:1001.3391] [<http://fqxi.org/community/essay/winners/2009.1>]
- The three and a half layers of dynamics: analog, digital, semi-digital, analog; [arXiv:1106.0911] <http://fqxi.org/community/essay/winners/2011.1>

POPULAR TALKS

- Octonions, elementary particles, and unification, webinar at Physics and Astronomy Club, IIT Delhi, March 6, 2021
https://youtu.be/kL_JnD2PxJI
- Why was Einstein dissatisfied with quantum mechanics? PROBE'19 Inaugural Lecture, St. Xavier's College, Mumbai, February 21, 2019
- The trouble with quantum mechanics, St. Xavier's College, Mumbai, February 18, 2017
- Unresolved problems in quantum mechanics, St. Xavier's College, Mumbai, September, 2011.
- Big bang and the history of the Universe, National College, Mumbai, February, 2010
- Black holes and the Universe, Khalsa College, Mumbai, January, 2009.
- Not seeing is believing, Science College, Thane, January, 2008.
- Why was Einstein dissatisfied with quantum mechanics? Science College, Thane, November, 2005.
- The Dark Forces of Nature, Astronomy Olympiad Lecture Series, TIFR, Mumbai, May, 2005.
- Physics from Newton to Einstein, BASE Symposium Lecture, Nehru Center, Mumbai, November, 2004.
- The Dark Forces of Nature; M. V. Kamat Memorial Lecture, St. Xaviers College, Mumbai, February, 2003.
- Black Holes: Magic and Mystery; National College, Mumbai, August, 2002.
- Black Holes: Magic and Mystery: Wilson College, Mumbai, October, 2002.

- The Universe: Past, Present and Future; Nehru Planetarium, Mumbai, January, 2001.

POPULAR VIDEOS/BLOG

- Aikyons, octonions, and unification (2020)
https://www.youtube.com/watch?v=RmrkmGVUzo4&ab_channel=TejinderSingh
- YouTube Video Lecture *Towards unification of the four fundamental forces (2020)*
https://www.youtube.com/watch?v=uxdvergYNrg&ab_channel=TejinderSingh
- YouTube Video Lecture *Spontaneous quantum gravity*
https://www.youtube.com/watch?v=IJK_mE8K8uw
Tejinder P. Singh (2019)
- Does Nature Play Dice? Youtube https://www.youtube.com/watch?v=wSiDsMKS_uU
(2015)
- YouTube Video Lecture Series: Thinking about Quantum Gravity
<https://www.youtube.com/watch?v=-TleM9cGBK4>
(2018)
- BLOG: Schrodinger's cat, and Einstein's space-time, in the twenty-first century
qfqq.blogspot.com
(2019)

FULL LIST OF PUBLICATIONS : As on August 18, 2021

117. *Majorana neutrinos, Exceptional Jordan algebra, and mass ratios for charged fermions*; Vivan Bhatt, Rajrupa Mondal, Vatsalya Vaibhav and Tejinder P. Singh, arXiv:2108.05787 [hep-ph] (2021) submitted for publication.

116. *Left-Right symmetric fermions and sterile neutrinos from complex split biquaternions and bioctonions*, Vatsalya Vaibhav and Tejinder P. Singh, arXiv:2108.01858 [hep-ph] (2021) submitted for publication.

115. *The characteristic equation of the exceptional Jordan algebra: its eigenvalues, and their relation with mass ratios of quarks and leptons*. Tejinder P. Singh, submitted for publication (2020)
<https://www.preprints.org/manuscript/202101.0474/v4>
doi: 10.20944/preprints202101.0474.v4

114. *Why does the Kerr-Newman black hole have the same gyromagnetic ratio as the electron?* M S Meghraj, Abhishek Pandey, and Tejinder P. Singh; arXiv:2006.05392 [gr-qc] submitted for publication.

113. *Proposal for a new quantum theory of gravity IV: black hole entropy from non-commutative geometry and spontaneous localisation*; Palemkota Maithresh and Tejinder P. Singh, [arXiv:1909.02434 (gr-qc)] submitted for publication

A. In Refereed Journals:

112. *Quantum theory without classical time: octonions, and a theoretical derivation of the fine structure constant $1/137$* Tejinder P. Singh, accepted for publication in *Int. J. Mod. Phys. D* (2021). <https://doi.org/10.1142/S0218271821420104>

<https://www.preprints.org/manuscript/202105.0370/v1> doi: 10.20944/preprints202105.0370.v1

This essay received an honourable mention in the Gravity Research Foundation essay contest 2021.

111. *Spontaneous quantum gravity*; Tejinder P. Singh, arXiv:1912.03266 *Journal of High Energy Physics, Gravitation and Cosmology* 7, 880-905 (2021) doi: 10.4236/jhepgc.2021.73050

110. *Trace dynamics, and a ground state in spontaneous quantum gravity*, Abhinash Kumar Roy, Anmol Sahu and Tejinder P. Singh, *Mod. Phys. Lett. A* 36, 2150019 (2020).

<https://www.worldscientific.com/doi/epdf/10.1142/S021773232150019X>

<https://www.tifr.res.in/~tpsingh/qginitialstate.pdf> arXiv:2104.14344

109. *Quantum gravity, holography, and minimal length*; Tejinder P. Singh, [arXiv:1910.06350 [gr-qc]] to appear in *Pramana - Journal of Physics* 95, 40 (2021) <https://doi.org/10.1007/s12043-020-02052-2>

108. *Trace dynamics and division algebras: towards quantum gravity and unification*, Tejinder P. Singh, arXiv:2009.05574 [hep-th] (2020) *Zeitschrift fur Naturforschung A* 76 (2021) 131

DOI: <https://doi.org/10.1515/zna-2020-0255>

107. *Octonions, trace dynamics and non-commutative geometry: a case for unification in spontaneous quantum gravity*, Tejinder P. Singh arXiv:2006.16274 (2020) *Zeitschrift fur Naturforschung A* DOI: <https://doi.org/10.1515/zna-2020-0196>

106. *A basic definition of spin in the new matrix dynamics*, Tejinder P. Singh, ***Zeitschrift fur Naturforschung A*** DOI: <https://doi.org/10.1515/zna-2020-0183> (2020) arXiv:2006.16274v1 DOI: <https://doi.org/10.1515/zna-2020-0183>

105. *Nature does not play Dice on the Planck scale*, Tejinder P. Singh, arXiv:2005.06427 ***Int. J. Mod. Phys. D*** (2020) 2043012 <https://doi.org/10.1142/S0218271820430129>

104. *From quantum foundations to spontaneous quantum gravity: an overview of the new theory*; Tejinder P. Singh, (2020) arXiv:1909.06340 [quant-ph] ***Zeitschrift fur Naturforschung A*** 75, 833 (2020)

DOI: [10.1515/zna-2020-0073](https://doi.org/10.1515/zna-2020-0073)

103. *Dark energy as a large scale quantum gravitational phenomenon*; Tejinder P. Singh, arXiv:1911.02955 [gr-qc] ***Mod. Phys. Lett. A*** 35 (2020) 2050195 <https://doi.org/10.1142/S0217732320501953>

102. *Path integrals, spontaneous localisation, and the classical limit*; Bhavya Bhatt, Manish, Raj Patil, Ruchira Mishra, Shlok Nahar, and Tejinder P. Singh, [arXiv:1808.04178] **Zeitschrift fur Naturforschung A 75 (2020) 131**, DOI: 10.1515/zna-2019-0251
101. *Proposal for a new quantum theory of gravity III: equations for quantum gravity, and the origin of spontaneous localisation*; Palemkota Maithresh and Tejinder P. Singh, [arXiv:1908.04309 (gr-qc)] **Zeitschrift fur Naturforschung A 75 (2020) 143**, DOI: 10.1515/zna-2019-0267
100. *Proposal for a new quantum theory of gravity II: spectral equation of state for the atom of space-time-matter*; Tejinder P. Singh [arXiv:1906.08248] **Zeitschrift fur Naturforschung A 74 (2019) 989** [10.1515/zna-2019-0211](https://doi.org/10.1515/zna-2019-0211)
99. *Quantum gravity as an emergent phenomenon*, Shounak De, Tejinder P. Singh and Abhinav Varma, arXiv:1903.11066 [gr-qc] *Int. J. Mod. Phys. 28* (2019) 1944003 <https://doi.org/10.1142/S0218271819440036>
98. *Proposal for a new quantum theory of gravity*; Tejinder P. Singh [arXiv:1903.05402] (2019), **Zeitschrift fur Naturforschung A 74** (2019) 617 DOI: <https://doi.org/10.1515/zna-2019-0079>
97. *Outline for a quantum theory of gravity*, Tejinder P. Singh, arXiv:1901.05953 (2019) **Zeitschrift fur Naturforschung A 74** (2019) 383, DOI: 10.1515/zna-2019-0027
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