

Curriculum Vitae: Tristan Hübsch



Born: 1958, Dec. 22nd in Novi Sad, Yugoslavia

Address:

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Education

B.Sc.: Institute of Physics, 09/81, University of Novi Sad, Yugoslavia (M. Nikolić) 1977–81.

(Two first prizes in the Undergraduate Research Contest of the University of Novi Sad)

M.Sc.: Department of Physics, University of Zagreb, Yugoslavia (S. Pallua) 1981–84 (left for USA before completing).

Ph.D.: Department of Physics and Astronomy 9/87, University of Maryland, College Park, USA (J.C. Pati) 1984–87.

“Unification of space-time and internal symmetries through superstrings, with elementary or composite quarks”

Academic Genealogy: [Academic Tree](#), [Mathematics Genealogy Project](#)

Spring/Summer-School and Workshop Participation

- International Summer-School in High Energy Physics, Kupari, Yugoslavia; 9/80.
- International Summer-School in High Energy Physics, Kupari, Yugoslavia; 9/81.
- International Conference on Phenomenology of Unified Theories, Dubrovnik, Yugoslavia; 5/83.
- III Adriatic Meeting: Supersymmetries and Supergravities, Dubrovnik, Yugoslavia; 6/83.
- International Summer-School in High Energy Physics, Kupari, Yugoslavia; 9/83.
- Spring Workshop on Supersymmetry and Supergravity, ICTP, Trieste, Italy; 4/84.
- Summer Workshop on High Energy Physics and Cosmology, ICTP, Trieste, Italy; 6–8/85.
- II Workshop on Fundamental Physics, Humacao, Puerto Rico, USA; 3/86.
- International Conference on Nuclear Structure, Reactions and Symmetries, Dubrovnik, Yugoslavia, 6/86.
- IV Adriatic Meeting: Supersymmetry and Superstrings, Dubrovnik, Yugoslavia; 6/86.
- Summer Workshop on High Energy Physics and Cosmology, ICTP, Trieste, Italy; 6–8/86.
- Summer Workshop on High Energy Physics and Cosmology, ICTP, Trieste, Italy; 6–8/87.
- Summer School on High Energy Physics and Cosmology, ICTP, Trieste, Italy; 6–8/88.
- XIII International School of Theoretical Physics, Szczyrk, Poland; 9/89.
- Workshop on Mirror Symmetry, Berkeley, CA, USA; 5/91.
- AMS Meeting Special Session on Mirror Symmetry, Lexington, KY; 3/94.
- Workshop on Mirror Symmetry, Stillwater, OK, USA; 3/95.
- The JAMI Conference on Birational Geometry, Baltimore, MD, USA; 4/96.
- SUSY 96 Conference, College Park, MD, USA; 5–6/96.
- Conformal Field Theory Workshop, Oberwolfach, Germany; 6/96.

- [Integrable Models and Strings Workshop](#), Hannover, Germany; 6/96.
- [AAPT New Faculty Workshop](#), College Park, MD; 10–11/96.
- [Workshop on Geometry and Physics](#), Hsinchu University, Hsinchu, Taiwan, 7/98.
- [Title III Workshop: Changing the Face of Education In the Millennium and Beyond](#), San Diego, 12/98.
- [“Geometric Transitions” Workshop](#), Caltech-USC Center for Theoretical Physics, Los Angeles, 01/02.
- [Annual Conference of the National Society of Black Physicists](#), Atlanta, GA, 02/03.
- [9th Adriatic Meeting: “Particle Physics and the Universe”](#), Dubrovnik, Croatia, 09/03.
- [International Conference for Physics Students](#), Novi Sad, Serbia & Montenegro, 08/04.
- [K-theory and Supersymmetry: Mathematics & Physics Workshop](#), University of Washington, Seattle, 02/05.
- [AMS Meeting, Special Session: “K-theory in M-theory”](#), University of Oregon, Eugene, 11/05.
- [BIRS Workshop: Off-shell Supersymmetry via Graph Theory and Superspace \(2nd D.F. Ghil Workshop\)](#), BANFF, Canada, 07/06.
- [3rd D.F. Ghil Workshop](#), University of Washington, Seattle, 06/07.
- [Workshop on Supersymmetry, Graphs, and Codes at Pepperdine University](#), Pepperdine University, Malibu, 09/07.
- [Geometric Analysis: Present and Future](#), Harvard University, Cambridge, MA, 08/27/08–09/01/08.
- [VA-DC-MD String and Particle Theory Meeting](#), Charlottesville, October 6, 2012.
- [Topical Conference on Elementary Particles, Astrophysics, and Cosmology](#), Fort Lauderdale, December 13–20, 2012.
- [Focus Program on Topology, Stratified Spaces and Particle Physics & Workshop on Singular Spaces in String and M-theory](#)
[The Fields Institute for Research in Mathematical Sciences](#), University of Toronto, Canada, August 15–19, 2016.
- [Southeastern Regional Mathematical String Theory Meeting](#), Virginia Tech. University, Blacksburg, VA, October 07, 2017.
- [String Theory, Geometry and String Model Building](#), Mainz Institute for Theoretical Physics, Mainz, Germany, September 10–21, 2018.
- [\(Virtual\) Strings 2020](#), Cape Town, South Africa, 06/29/2020–07/03/2020.
- [String Math 2020](#), Cape Town, South Africa, 07/27/2020–07/31/2020.
- [String Math 2021](#), IMPA, Rio de Janeiro, Brazil, 06/14–18/2021.
- [Strings 2021](#), ICTP-SAIFR, São Paulo, Brazil, 06/21–07/02/2021.
- [Mathematical Dialogues: Celebrating the 110th Anniversary of the Birth of Prof. S.-S. Chern](#), Nankai University, Tianjin, China, 08/2–13/2021.
- [Southeastern Regional Mathematical String Theory Meeting](#), Duke University, Durham, NC, 10/08/2022.
- [Miami Topical Physics Conference](#), Department of Physics, Miami University, Coral Gables, FL, 12/14–20/2022.

Continuing Seminars, Colloquia and Workshops

- [Western Hemisphere Colloquium on Geometry and Physics](#), bi-weekly Zoom Seminars, 04/13/2020–present.

Positions Held

(listed in chronological order of start time, with current positions in boldface)

- *Postdoctoral Associate*, 09/1987–09/1990.
[Theory Group](#), Physics Department, University of Texas, Austin, TX 78712, USA
- *Research Associate*, 01/1988–05/2002
[Institute “Rudjer Bošković”](#), Bijenička 54, 41000 Zagreb, Croatia.
- *Postdoctoral Fellow*, 09/1990–09/1992.

- [Harvard University Mathematics Department](#), Cambridge, MA 02138, USA
- *Postdoctoral Affiliate*, 06/1991–09/1992.
- [Harvard University Physics Department](#), Cambridge, MA 02138, USA
- *Visiting Lecturer*, 09–11/1991.
- [The National Tsing-Hua University at Hsinchu](#), Taiwan, R.O.C.
- *Assistant Professor*, 08/1992–05/1995
- [Howard University Physics & Astronomy Department](#)
Washington, DC 20059, USA
- *Associate Professor*, 06/1995–06/2000 (tenured: Summer 1997)
- [Howard University Physics & Astronomy Department](#)
Washington, DC 20059, USA
- **Adjunct Professor, 06/1995 – present**
- [Howard University Mathematics Department](#) Washington, DC 20059, USA
- *Research Associate*, 12/1996–01/1997, 03/1997
- [Harvard University Mathematics Department](#), Cambridge, MA 02138, USA
- *Visiting Scholar*, 01/1998–12/2000
- [Institute for Theoretical Physics](#), Santa Barbara, CA 02138, USA
- **Professor, 6/2000 – present**
- [Howard University Physics & Astronomy Department](#) Washington, DC 20059, USA
- *Visiting Scholar*, Fall 2000
- [CIT-USC Center for Theoretical Physics](#), University of Southern California, Los Angeles, CA 90089-2535
- *Visiting Scholar*, 01/2004 - 12/2006
- [Kavli Institute for Theoretical Physics](#), Santa Barbara, CA 02138, USA
- *Adjunct Professor*, 12/2004–12/2006
- [Strayer University](#), Manassas, VA 20169, USA
- *Professor*, 01/2007–05/2008
- [Department of Applied Mathematics and Theoretical Physics \(now within \[Department of Mathematical Sciences\]\(#\)\)](#), [Delaware State University](#), Dover, DE 19901, USA
- **Visiting Professor, 12/2007 – present**
- [University of Novi Sad, Faculty of Sciences](#), Novi Sad, Serbia
- **Research Professor, 09/2009 – present**
- [University of Central Florida, Department of Physics](#), Orlando, FL
- **Research Professor, 09/2015 – present**
- [University of Maryland, Department of Physics](#), College Park, MD

Awards

- “[Most dissertations Advised for the Division of Engineering and Physical Sciences](#)”
(3 in the discipline of physics) for the year 2007–2008, 04/09/2009
Office of the Vice Provost for Research and Graduate School, Howard University
- “[Outstanding Associate or Full Professor](#)”
2017–18: Division of Natural Sciences, College of Arts and Sciences, Howard University,

Teaching and Lecturing [^]

Invited Lectures

- Symmetries in Physics (joint lectures with D. Kapor)
at the University of Novi Sad, Yugoslavia; (Fall '82).
- Teaching assistant for various courses

at the University of Zagreb ('83–84.), Yugoslavia.

- Teaching assistant for various courses at the University of Maryland ('84–87.), College Park, MD 20742 USA
- Lectures at the Summer Workshop in High Energy Physics and Cosmology at ICTP, 07/86, Trieste, Italy.
- Lectures at Summer Workshop in High Energy Physics and Cosmology at ICTP, 07/87, Trieste, Italy.
- Lectures at the XIII International School of Theoretical Physics, 09/89 Szczyrk, Poland.
- Course on Supersymmetry and Superstrings, Fall '91 at The National Tsing-Hua University at Hsinchu, Taiwan, R.O.C.

Harvard University

Undergraduate Courses

Course Calculus II (with O. Bretscher), Summer '92

Howard University

Undergraduate Courses

PHYS-001: [General Physics I](#), Summer '06, '08–12.

PHYS-002: [General Physics II](#), Summer '06–12.

PHYS-008: [General Physics for Architects](#), Summer '94, '02, Fall '18.

PHYS-013: [Physics for Scientists and Engineers I](#), Fall '01.

PHYS-014: [Physics for Scientists and Engineers II](#), Spring '02.

PHYS-015: [Introduction to Modern Physics](#), Spring '00.

PHYS-023: General Physics Laboratory, Fall '94.

PHYS-092: Dept. Honors (senior), Fall '95.

PHYS-178: Electricity and Magnetism I, Fall '92.

PHYS-179: Electricity and Magnetism II, Spring '93.

PHYS-192: [Introduction to Mathematical Physics I](#), Fall '92–97, '04–06, '08–22.

PHYS-193: [Introduction to Mathematical Physics II](#), Spring '93–98, '05–06, '09–22.

Graduate Courses

PHYS-204: Electricity and Magnetism I, Fall '92.

PHYS-205: Electricity and Magnetism II, Spring '93.

PHYS-214: [Electromagnetic Theory I](#), Fall '15–17, '22.

PHYS-215: [Electromagnetic Theory II](#), Spring '16–18, '22.

PHYS-216: [Mathematical Methods I](#), Fall '92–97, '04–06, '08–22.

PHYS-217: [Mathematical Methods II](#), Spring '93–98, '05–06, '09–22.

PHYS-220: [Quantum Mechanics I](#), Fall '93–06, '08–14.

PHYS-221: [Quantum Mechanics II](#), Spring '94–06, '09–16.

PHYS-228: [Fundamental Particle Physics I](#), Fall '11.

PHYS-229: [Fundamental Particle Physics II](#), Spring '12.

PHYS-238: [Theoretical Physics I](#), Fall '98–00.

PHYS-239: [Theoretical Physics II](#), Spring '99.

MATH-245: [Methods of Applied Math. I](#), Fall '96–97, '05.

MATH-246: [Methods of Applied Math. II](#), Spring '97–98, '06.

PHYS-266: [Advanced Mathematical Methods I](#), Fall '02.

PHYS-267: [Advanced Mathematical Methods II](#), Spring '03.

PHYS-279: Advanced Field Theory I, Spring '05.

PHYS-281: Introduction to High Energy Physics, Spring '93.

Strayer University

Undergraduate Courses

- MAT100: [Fundamentals of Mathematics](#), Q3,4 '05.
 MAT105: [Introduction to College Mathematics](#), Q2 '06.
 MAT200: [Fundamentals of Mathematics](#), Q1,2 '05, Q1 '06.

Graduate Courses:

- MAT450: [Quantitative Methods](#), Q1–4 '05, Q1,4 '06.

Delaware State University

Undergraduate Courses

- MATH-121: [College Algebra](#), Spring '07.
 MATH-351: [Differential Equations](#), Spring '07.

Graduate Courses

- MATH-551: [Ordinary Differential Equations](#), Fall '07.
 MATH-641: [Combinatorics](#), Spring '07–'08.
 PHYS-525: [Thermodynamics and Kinetic Theory](#), Spring '08.
 PHYS-655: [Computational Methods](#), Fall '07.
 MATH-871: [Complex Analysis II](#), Spring '08.

University of Novi Sad

BSc/MSc Program Course

- [High-Energy/Elementary Particle Physics](#) (two-week block-course), Spring '09–20.

Invited Talks ^

1. *Non-minimal $SU(5)$ -model with a 75*
 International Summer-School in High Energy Physics Kupari, Yugoslavia; 09/83.
2. *Elementary Particle Physics and Gauge Theories*
 Summer Camp “Letenka”, University of Novi Sad, Yugoslavia; 06/84.
3. *Frontiers of Contemporary Elementary Particle-Cosmology*
 University of Novi Sad, Yugoslavia; 12/85.
4. *Preons from Superstrings*
 Second Workshop on Fundamental Physics Humacao, Puerto Rico; 3/86.
5. *Calabi-Yau Manifolds*
 University of Vienna, Austria; 6/86.
6. *Theory of Unified Nuclei?*
 International Conference on Nuclear Structure, Reactions and Symmetries, Dubrovnik, Yugoslavia; 6/86.
7. *Construction of Calabi-Yau Manifolds*
 IV Adriatic Meeting, Dubrovnik, Yugoslavia; 6/86.
8. *Manifold Compactification of Superstrings*
 Summer Workshop in High Energy Physics and Cosmology, ICTP, Trieste, Italy; 6/86.
9. *Do Superstrings Lead to Quarks or Preons ?*
 University of Crete, Iraklion, Greece; 6/87.
10. *Superstrings on Calabi-Yau Manifolds*
 University of Crete, Iraklion, Greece; 6/87.
11. *Polynomial Deformations and Cohomology on Calabi-Yau Manifolds*
 » Summer Workshop in High Energy Physics and Cosmology, ICTP, Trieste, Italy; 6/87
 » University of Texas at Austin, Austin, TX, USA; 9/87

- » University of Texas A&M, College Station, TX, USA; 9/87.
12. *Phenomenology of Superstring Theories*
Institute “Rudjer Bošković”, Zagreb, Yugoslavia; 6/87.
 13. *Superstrings and Cohomology of Calabi-Yau Manifolds*
University of Maryland, College Park, MD, USA; 9/87.
 14. *Possible Transitions Among (Many of) Calabi-Yau Vacua*
» CERN, Geneva, Switzerland; 6/88;
» Summer School on High Energy Physics and Cosmology, ICTP, Trieste, Italy; June-6/88.
 15. *Finite Distances Between Distinct Calabi-Yau Vacua*
California Institute of Technology, Pasadena, CA, USA; 6/88.
 16. *Connected Calabi-Yau Compactifications*
» University of Maryland, College Park, MD, USA; 9/89;
» Fermilab, Batavia, USA; 6/89.
 17. *Unified Calabi-Yau Compactifications*
» Institute “Rudjer Bošković”, Zagreb, Yugoslavia; 6/89;
» the Enrico Fermi Institute, Univ. of Chicago, Chicago, USA; 6/89.
 18. *Sigma-Model vs. Point Field Description of Compactification*
Institut für Theoretische Physik, Universität Wien, Wien, Austria; 9/89.
 19. *Chameleonic Sigma-Models*
» Harvard University, Cambridge, MA, USA; 6/90;
» The Los Alamos Theory Group, Los Alamos, NM, USA; 6/90.
 20. *Topology Changing Sigma-Models*
Oklahoma State University, Norman, OK, USA; 6/89.
 21. *Realistic Superstring Compactifications*
Oklahoma State University, Norman, OK, USA; 6/89.
 22. *Elusive Conifolds (Sick Landau-Ginzburg Models)*
Harvard University, Cambridge, MA, USA; 6/90.
 23. *Cohomology Computation through Advanced Magic*
Harvard University, Cambridge, MA, USA; 6/90.
 24. *Web of Topologically Distinct Calabi-Yau 3-Folds*
MIT, Cambridge, MA, USA; 6/90.
 25. *Stringy Cosmic Strings*
University of Pennsylvania, Philadelphia, PA, USA; 6/91.
 26. *Calabi-Yau Cosmic Yarn*
Harvard University, Cambridge, MA, USA; 6/91.
 27. *Possibly Realistic String Theories*
The National Tsing-Hua University Physics Dept., Hsinchu, Taiwan; 6/91.
 28. *Gravitation and Quantum Physics of the Real World: Strings*
Academia Sinica, Taipei, Taiwan; 6/91.
 29. *A Generalized Construction of Mirror Models*
Harvard University, Cambridge, MA, USA; 6/92.
 30. *Spacetime Variable Calabi-Yau Vacua*
MIT, Cambridge, MA, USA; 6/92.
 31. *An $SL(2)$ -Action and Lefschetz Decomposition of Jacobian Rings*
Harvard University, Cambridge, MA, USA; 6/92.
 32. *On Springs, Strings and Sphinx*
Howard University, Washington, DC, USA; October '92.

33. *Of Cosmic Yarn - Or, From Strings to Cosmic Strings*
Howard University, Washington, DC, USA; December '92.
34. *Mirror Landau-Ginzburg Models*
University of Pennsylvania, Philadelphia, PA, USA; 6/93.
35. *Calabi-Yau Cosmic Strings*
Institute for Advanced Study, Princeton, NJ, USA; April '93.
36. *The Mirror Symmetry of Manifolds with $K=0$ may Nevertheless be Trivial*
AMS Meeting in Lexington, KY; 6/94.
37. *Partition Functions for Supersymmetric and Calabi-Yau Models*
University of Maryland, College Park, MD; April '94.
38. *Mirror Symmetry for Algebraic Varieties - Benefits from String Theory*
Howard University, Washington, DC, USA; October '94.
39. *The Origins of Mirror Symmetry for Algebraic Varieties*
Oklahoma State University, Stillwater, OK, USA; March 1995.
40. *Life, Death and Resurrection of Chargeless Matter (from Superstrings)*
University of Maryland, College Park, MD, USA; December '95.
41. *A Hitchhiker's Guide to Superstring Jump Gates and Other Worlds*
» University of Maryland, College Park, MD, USA; 6/96.
» Humbolt University, Berlin, Germany; 6/96.
42. *A Stringy Singular Cohomology*
Mathematische Institut, Oberwolfach, Germany; 6/96.
43. *Generic and Unusual Superstring Vacua*
Institut für Theoretische Physik, Univ. Hannover, Germany; 6/96.
44. *A Hitchhiker's Guide to Superstring Jump Gates and Other Worlds*
Physics Department, University of Waterloo, Waterloo, Canada; 4/97.
45. *Quantum Mechanics is Either Non-Linear or Non-Introspective*
University of Waterloo, Waterloo, Canada; 4/97.
46. *A Hitchhiker's Guide to Superstring Jump Gates and Other Worlds*
» Eötvös Loránd University, Budapest, Hungary; 6/97;
» Theory Division, CERN, Geneva, Switzerland; 6/97.
47. *String Theory as a Theory of Mapping of Riemann Surfaces*
Department of Mathematics, Howard University; 11/97.
48. *The Lefschetz $SL(2)$ Action and its Mirror*
Department of Physics, Johns Hopkins University; 2/98.
49. *Conifolds in the Linear Sigma Model*
Department of Physics, Pennsylvania State University; 2/98.
50. *Through Strings to Cosmic Strings, and Why*
Math and Physics Clubs, Hampden-Sydney College; 3/98.
51. *A Ubiquitous $SL(2, \mathbb{C})^2$ Mirror Symmetry in (2,2)-Supersymmetry*
Workshop on Geometry and Physics, Tamkang University, Tamkang, Taiwan, 7/98.
52. *The Category of Superstring Target Spaces*
Workshop on Geometry and Physics, Hsinchu University, Hsinchu, Taiwan, 7/98.
53. *Ubiquitous $SL(2, \mathbb{C})^2$ Mirror Symmetry in (2,2)-Supersymmetry*
» Department of Physics, Hannover University, Hannover, Germany; 7/98;
» Department of Physics, Humbolt University, Berlin, Germany; 7/98.
54. *A Hitchhiker's Guide to Superstring Jump Gates and Other Worlds*
Physics Department, University of Virginia, Charlottesville, VA, 9/98.

55. *Warning: a (2,2)-Supersymmetric Epidemic!*
 - » Institute for Theoretical Physics, University of California, Santa Barbara, CA, 11/98;
 - » Department of Physics, CalTech, Pasadena, CA, 12/98.
56. *Warning: a (2,2)-Supersymmetric Epidemic is Spreading!*
 - » Department of Physics, University of Florida, Gainesville, FL 10/99;
 - » Department of Physics, University of Miami, Coral Gables, FL 10/99.
57. *SEUSS: Singular, Eclectic and Uncharted Stringy Spacetimes*
 - » Department of Physics, CalTech, Pasadena, CA, 12/00;
 - » Department of Physics, Virginia Tech. University, Blacksburg, VA, 02/02.
58. *Space-Time in String Theory and Related Models*
 - » Institut fuer Physik, Vienna, Austria, 01/03;
 - » The “Rudjer Bošković” Institute of Physics, Zagreb, Croatia, 01/03.
59. *de Sitter Brane Worlds from String Theory*
Zavod za Fiziku, PMF, Zagreb, Croatia, 01/03.
60. *Stringy Spacetimes - A Warp Ten Review*
 - » Annual Conference of the National Society of Black Physicists, Atlanta, GA, 02/03;
 - » Mathematics Department, American University, Washington, DC, 02/03.
61. *Stringy Brane Worlds Near Naked Singularities*
9th Adriatic Meeting: "Particle Physics and the Universe", Dubrovnik, Croatia, 09/03.
62. *de Sitter Brane Worlds from String Theory*
Institut za Fiziku, Beograd, Serbia, 09/03.
63. *Prostor-vreme-materija, s pogledom u novi milenijum (Space-Time-Matter, With a View Into the New Millennium)*
University of Novi Sad, Novi Sad, Serbia, 09/03.
64. *A Dynamical “ET” Censorship in Stringy Brane-Worlds*
Department of Physics & Astronomy, Howard University, Washington DC, 10/03.
65. *Stringy de Sitter Brane Worlds (Dressing Naked Singularities in a Little Nothing)*
International Centre for Theoretical Physics, Trieste, Italy, 07/04.
66. *(Super)Strings: A Theory of More Than Everything*
International Conference for Physics Students, Novi Sad, Serbia & Montenegro, 08/04.
67. *Supersymmetry in Superstrings’ Foundations*
Department of Physics and Department of Mathematics, University of Washington, Seattle, 02/05.
68. *On Superspace Description of Representations of Supersymmetry*
AMS Meeting, University of Oregon, Eugene, 03/05.
69. *On Graph-Theoretic Identifications of Adinkras, Supersymmetry Representations and Superfields*
Department of Mathematics, Howard University, Washington, 01/06.
70. *Graph Theory and Supersymmetry*
Delaware State University, Delaware, 05/06.
71. *Enough is Enough: Getting Susy to Behave*
“BIRS Workshop: Off-shell Supersymmetry via Graph Theory and Superspace”, BANFF, Canada, 07/06.
72. *A Picturebook of N-extended Supersymmetry in the 1-Dimensional World of Time*
Department of Physics and Department of Mathematics, University of Washington, Seattle, 06/07.
73. *Off-Shell Representations of Supersymmetry via Graphs, Topology and Codes*
Department of Physics, Virginia Polytechnic Institute & State University, Blacksburg, 09/07.
74. *Towards a Theory of (More Than) Everything, a mini-course*
Department of Physics, School of Natural Sciences, Novi Sad, Serbia, 06/08.

75. *Space-Time-Matter, at the Dawn of the Third Millennium*
Planetarium, Novi Sad, Serbia, 06/08.
76. *Superspace: An Algebraic Variety (invited talk at the “Geometric Analysis: Present and Future” conference)*
Department of Mathematics, Harvard University, Cambridge, MA 09/01/08.
77. *From Superstrings and Things to Everything Else and Beyond*
Department of Physics, University of Central Florida, Orlando, FL, 09/11/08.
78. *Building Blocks of Supersymmetry, a colloquium*
Department of Physics, University of Central Florida, Orlando, FL, 09/12/08.
79. *Extra! Extra! Extra Dimensions! Room Enough for Many Worlds! (@YouTube)*
Department of Physics, University of Central Florida, Orlando, FL, 09/17/09.
80. *A Realistic Superstring-Inspired Brane-World Cosmology*
Department of Physics, University of Central Florida, Orlando, FL, 09/18/09.
81. *On Springs, SuperThings and the Sphinx: a Quest for Dimensions*
Department of Physics and Astronomy, Howard University, Washington, DC, 12/02/09.
82. *Is Reality a Matrix?, a colloquium*
Department of Physics and Astronomy, Howard University, Washington, DC, 2/17/10.
83. *Through the Looking-Glass, and What Physics is Found There*
Department of Physics and Astronomy, Howard University, Washington, DC, 11/17/10.
84. *Rutherford-ovo otkrice atomskog jezgra: legat fundamentalne fizike*
(*Rutherford's discovery of the atomic nuclues: a legacy of fundamental physics*)
Department of Physics, University of Novi Sad, Novi Sad, Serbia, 05/13/11.
85. *Discovering the Nucleus of the Indivisible*
Department of Physics, University of Central Florida, Orlando, FL, 09/29/11.
86. *When License In Scientific Inquiry Turns Poetic,*
Department of Physics, University of Central Florida, Orlando, FL, 09/30/11.
87. *Through the Looking Glass, and What Mathematics Lurks There*
Department of Mathematics, Howard University, Washington, DC, 01/27/12.
88. *Božja čestica: delić koji nedostaje ili kost u grlu? (The God Particle: a Missing Piece or a Thorn in the Side?)*
Festival nauke, Novi Sad, 12–13 Maj 2012.
89. *Off-Shell Supermultiplets and Error Correcting Codes*
VA-DC-MD String and Particle Theory Meeting, Charlottesville, October 6, 2012.
90. *Off-Shell Supermultiplets*
Topical Conference on Elementary Particles, Astrophysics, and Cosmology, Fort Lauderdale, December 13–20, 2012.
91. *The Real Worlds-Wide-Web*
SPS Zone 6 Meeting, University of Central Florida, Orlando, FL, April 12–14, 2013.
92. *On Square-Roots of Nothing, Supersymmetry and Error-Correcting Encryption*
Department of Mathematics, Bard College, Annandale-on-Hudson, NY, April 18, 2013
93. *Kvantna supersimetrija i binarna enkripcija (Quantum Symmetry and Binary Encryption)*
Department of Physics, University of Zagreb, Croatia, May 21, 2013
94. *Mreža Calabi-Yau Mnogostrukosti (The Real World Wide Web)*
The “Rudjer Bošković” Institute of Physics, Zagreb, Croatia, May 23, 2013
95. *Effective Symmetries: Clues and Surprises*
Department of Phycsis and Astronomy, Howard University, Washington, DC, October 22, 2014.
96. *Effective Symmetries: Signs, Signals and Surprises*

- Department of Mathematics, University of Central Florida, Orlando, FL, April 09, 2015.
97. *Through the Looking Glass: When the Mirror Image Grows Up*
Department of Physics, University of New Hampshire, Durham, NH, September 30, 2015.
 98. *Generalized Complete Intersections and Novel Calabi-Yau Varieties*
Department of Mathematics, Howard University, Washington, DC, February 19, 2016.
 99. *Novel Ricci-Flat Ground States*
Department of Physics and Astronomy, Howard University, Washington, DC, February 28, 2016.
 100. *Od stringova do 'brana i svega ostalog (From Strings and 'branes to everything else) [[@YouTube](#)]*
Department of Physics, University of Novi Sad, Novi Sad, Serbia, May 13, 2016.
 101. *Sinhronicitet u matematičkim i fizičkim otkrićima: slučajnost ili smisao?*
(*Synchronicity in mathematical and physical discoveries: serendipity or significance?*)
» Department of Mathematics, University of Novi Sad, Novi Sad, Serbia, May 14, 2016.
» Inaugural talk of the Society of Mathematicians of Novi Sad
 102. *Novel Calabi-Yau n-Fold Features and Constructions*
Focus Program on Topology, Stratified Spaces and Particle Physics & Workshop on Singular Spaces in String and M-theory
The Fields Institute for Research in Mathematical Sciences, University of Toronto, Canada,
August 15–19, 2016.
 103. *Evidence for Non-Convex Mirror Manifolds*
» Department of Physics, Virginia Tech. University, Blacksburg, VA, October 06, 2016;
» Department of Physics, Brown University, Providence, RI, December 14, 2016.
 104. *Novel Ricci-Flat Ground States, Part 2*
Department of Physics and Astronomy, Howard University, Washington, DC, February 8, 2017.
 105. *Evidence for (Infinitely Diverse) Non-Convex Mirrors [video]*
Southeastern Regional Mathematical String Theory Meeting, Virginia Tech. University, Blacksburg,
VA, October 07, 2017.
 106. *Evidence for (Infinitely Diverse) Non-Convex Mirrors*
String Theory, Geometry and String Model Building, Mainz Institute for Theoretical Physics,
Mainz, Germany, September 10–21, 2018.
 107. *The Dark Side of String Theory [video]*
» Department of Physics, University of Chicago, December 10, 2020.
» Miami 2020 Conference, University of Miami, December 15, 2020: [short version PDF]
» Department of Physics, Virginia Polytechnic Institute and State University, February 12, 2021.
 108. *Introspections on Quantum Introspection*
Quantum Biology Laboratory, Howard University, October 26, 2021.
 109. *Non-Convex Mirror Models of Ricci-Flat Spaces*
Miami Topical Physics Conference, Miami, Florida, December 19, 2021.
 110. *Laurent Mirror Models [video]*
» JimFest Scientific Workshop, [videos], Simons Center for Geometry and Physics, Stony Brook,
NY, April 13–15, 2022.
» Extended version: RIT on Geometry and Physics, Department of Mathematics, UMD, April 28
and May 5, 2022
 111. *Screening or Boosting (in Strong Interactions)*
Honors Induction Ceremony (Math & Physics), University of Central Florida, Orlando, FL, April
26, 2022.
 112. *Laurent Smoothing, Turin Degenerations and Mirror Symmetry [YouTube, Vimeo]*
School of Mathematical Sciences, University of Nottingham, Nottingham, UK, August 25, 2022.

113. *Laurent Deformations of Mirror Models*
[Miami Topical Physics Conference](#), Department of Physics, Miami University, Coral Gables, FL,
 December 20, 2022.
114. *Generalized Mirror Models Beyond Algebraic Toric Spaces*
[Southeastern Regional Mathematical String Theory Meeting](#), Virginia Tech. University, Blacksburg,
 VA, April 08, 2023.
115. *Laurent-Desingularized Mirror Calabi-Yau Models*
[International Conference “Quantum Field Theory And Gravity”](#), Centre for Theoretical Physics,
 Tomsk State Pedagogical University, Tomsk, Russia, July 11, 2023.

Service [^]

Abbreviating “AY nn ” = “Academic Year ’ nn -’($nn+1$)”; © = Chair.

Howard University [^]

Department of Physics & Astronomy

AY 93–95, 21–23: Executive Committee
 AY 93: Ad Hoc Committee
 AY 96–99: Undergraduate Curriculum Committee
 AY 02: Undergraduate Recruitment Committee
 AY 17–23: Library Committee
 AY 00–05: Seminar Committee (© AY 00)
 AY 00–06, 12–16: Graduate Division and Program **Director**
 AY 94–06, 08–16, 18–23: Graduate Curriculum Committee (© AY 98–00)
 AY 00–06, 08–16, 18–23: Graduate Student Status Committee (© AY 18, 20–22)
 AY 00–06, 08–16, 18–23: Graduate Student Admissions Committee
 AY 94–98, 00–06, 08–15, 17–23: Qualifying Exam Committee (© AY 98, 00, 02)
 AY 97–present: APT Committee (© AY 02, 08, 10, 19, 23)
 AY 17–present: Anand P. Batra Memorial Scholarship Committee (© AY 17–present)

College of Arts and Sciences

AY 94–95: Readmissions and Academic Status Committee
 AY 95–96: Academic Policy and Standards Committee
 AY 98–00: Admissions Committee
 AY 98–00: Alumni Awards and Honorary Degrees (© AY 00)
 AY 11–14: Information Technology Committee
 AY 15–18: Committee on Governance Constitution and Bylaws
 AY 20–22: Appointments, Promotion and Tenure Committee
 AY 17–21: Faculty Representative for Natural Sciences Division Executive Council

Graduate School

AY 00–02: Committee for the Constitution and By-Laws Revision
 AY 02–03: Grievance Committee (© AY 02, 03)
 AY 03: Financial Aid Allocation Committee
 AY 20–23: Appointments/Reappointments Committee

University

AY 22–23: Director of University Libraries Search Advisory Committee

Theses and Dissertations (© = Committee Chair, @ = Advisor)

- **Karuppasamy Sentrayan** (Ph.D.; Adv. V.S. Kushawaha, 10/05/93)
Laser Induced Nonlinear Effects in Molecular Gases
- **Arockiasamy Michael** (Ph.D.; Adv. V.S. Kushawaha, 10/26/93)
Collision Induced Dissociative Processes Relevant to Mercury Halide Lasers and Atmospheric Chemistry
- **Abdullahi Hashi Nur** (Ph.D.; Adv. P. Misra, 11/22/94)
Laser Optogalvanic Spectroscopy and Laser-Induced Kinetics Studies Pertaining to the Methoxy Radical
- **Mohammed M. Kamal** (M.S.; Adv. P. Misra, 11/29/94)
FTIR Spectroscopy and Higher Resolution Laser Spectroscopy Associated with Alkoxy and Alkylthio Radicals
- **Abbas Ali** (Ph.D.; Adv. A. Kumar, 10/25/95; at Utkal University, Bhubaneswar, India)
Superconformal Symmetry and String Theory
- © **Abdul Rahman** (©M.S.; Adv. W. Lowe and C. Bates, 04/15/96)
X-Ray Power Diffraction Analyses of Pt_xSi Phases in Composite Sputtering Targets and Films
- **Daniel Felten** (M.S.; Adv. W. Lowe, 12/2/96)
X-ray Diffraction Measurements of the Tetragonal Distortion in Coherently Strained Ge_xSi_{1-x} / Si Overlayers
- **Michael King** (Ph.D.; Adv. P. Misra, 12/6/96)
Laser Spectroscopy and Chemical Kinetics Investigations of the Methoxy Radical
- @ **Paula Ann Günter** (Ph.D. (math); Adv. **T. Hübsch**, 04/1/97)
Toric Calabi-Yau Varieties and Their Moduli Spaces
- @ **Raja Q. Almkahhal** (Ph.D.; Adv. **T. Hübsch**, 04/4/00)
Gauging Yang-Mills Symmetries in 1+1-Dimensional Spacetime
- **Avaine Strong** (Ph.D.; Adv. P.M. Bainum, 10/23/00)
On the Deployment and Station Keeping Dynamics of N-Body Orbiting Satellite Constellations
- © **Yang Yang** (*M.S.; Adv. S. Smith, 05/17/04)
Numerical Simulations for Hypersonic Base Flow about an Elliptical Cone
- © **Shewaferaw S. Shibeshi** (*Ph.D.; Adv. W.E. Collins, 04/20/05)
Simulated Transport of Low Density Lipoproteins in a Permeable T-Junction
- @ **Abdul Rahman** (Ph.D. (math); Adv. **T. Hübsch**, 03/17/06)
On the Construction and Cohomology of a Self-Dual Perverse Sheaf on Simple Stratified Spaces Motivated by String Theory; [[arXiv:0704.3298](https://arxiv.org/abs/0704.3298)].
- © **Angelina Amadou** (*Ph.D.; Adv. P.M. Misra, 03/27/06)
Microphysical and optical Properties of Organic Aerosols and Their Relevance to Cloud Condensation Nuclei
- **Johnny Batts** (Ph.D.; Adv. P.M. Misra, 06/14/06)
Spectroscopic Measurements of the Concentration of Atmospheric Formaldehyde (CH_2O) in Beltsville, Maryland
- @ **Ivailo E. Petrov** (Ph.D.; Adv. **T. Hübsch**, 11/22/06)
On Unidexterous Matter and Gauge Fields
- @ **Aaron F. Roane** (Ph.D.; Adv. **T. Hübsch**, 11/21/07)
Some Brane-World Cosmological Models
- @ **Tehani K. Finch** (Ph.D.; Adv. **T. Hübsch**, 04/07/08)
Chronology, Supertubes and the BMPV Black Hole; [[hep-th/0612085](https://arxiv.org/abs/hep-th/0612085)].
- @ **Mohammad K. Ahsan** (Ph.D.; Adv. **T. Hübsch**, 04/07/08)
Four-Dimensional Spacetime Physics from Orbifold M-Theory; [[arXiv:0810.4543](https://arxiv.org/abs/0810.4543)].
- **Caleb J. Ashley** (Ph.D. (math); Adv. T. Drumm, 04/15/13)
Four-Dimensional Spacetime Physics from Orbifold M-Theory; [[arXiv:0810.4543](https://arxiv.org/abs/0810.4543)].

- @ **Gregory A. Katona** (Ph.D.; Adv. **T. Hübsch**, 10/30/13; University of Central Florida)
Field Theoretic Lagrangian Stencils From Off-Shell Supermultiplet Gauge Quotients; [[arXiv:1202.4342](https://arxiv.org/abs/1202.4342),
[arXiv:1308.0654](https://arxiv.org/abs/1308.0654) and [arXiv:1310.3256](https://arxiv.org/abs/1310.3256)].
- © **Philip Kurian** (©Ph.D.; Adv. G. Dunston, 11/15/13)
Quantum Entanglement in the Genome? The Role of Quantum Effects in Catalytic Synchronization of Type II Restriction Endonucleases
- @ **Shawn K. Eastmond** (Ph.D.; Adv. **T. Hübsch**, 04/06/15)
Off-Shell Supersymmetric World-Sheet Models with Interactive $U_A(1) \times U_B(1)$ Gauge Symmetries
- @ **Dr. Malik Mansoor** (M.S.; Adv. **T. Hübsch**, 04/17/17)
Dark Matter & Dark Energy

Awarded (04/09/2009) by the Office of the Vice Provost for Research and Graduate School, Howard University
 “Most dissertations Advised for the Division of Engineering and Physical Sciences
 (3 in the Discipline of Physics) for the year 2007–2008”

Summer Programs

Minority Graduate Education Program, Summer 1999

- **Muhammad G. Dawson** (Physics Junior, Morehouse College)

Alliances for Graduate Education and the Professoriate, Summer 2000

- **James T. Williams, Jr.** (Physics Junior, Morehouse College)

REU in Physics at Howard University

- **Dometrios Gordine** (Virginia Union University), Summer 2014
- **Nick Mertes** (University of Miami, FL), Summer 2015
- **Filip Bergabo** (University of Connecticut, CT), Summer 2016

Creative work

- 1997–2006 & 2008–2017: Webmaster for the Department of Physics & Astronomy.
- Design and artwork for the Department of Physics & Astronomy undergraduate program brochure: [inside](#) and [outside](#).
- Design and artwork for the Department of Physics & Astronomy logos [1 \(one\)](#) and [2 \(two\)](#).
- A Mathematica [package](#) for **General Relativity, Einstein & All That (GREAT)** sort of calculation.
- For posters for various lectures, colloquia and other events, please visit [my Creative Gallery](#).

Delaware State University ^

Media appearance on the 02/01/2007 WBOC morning show

announcing the DSU visit and presentation by 1997 Nobel laureate, Dr. William Phillips.

Faculty Leader, Jan. '07 – May '08 (*first one ever appointed*)

assigned to Jenkins Hall, within the Academic Enrichment program

Department of Applied Mathematics and Theoretical Physics

Spring 07: Strategic Planning Committee

AY 07: Chair – (Graduate) Curriculum Committee

AY 07: Faculty Senate representative of the Department

College of Mathematics and Natural Sciences

AY 07: Graduate Program Director

Theses and Dissertations (©=Committee Chair)

- **Bing Han** (M.S., G. Zhang, 04/13/07)
New Travelling Wave Solutions for the Camassa-Holm Equation
- **Tia Vance** (M.S., D. Pokrajac, 04/30/07)
Methods of Incremental Principal Component Analysis on Image Processing
- © **Imaobong Ekanem** (©M.S., D. Pokrajac, 06/28/07)
Numerical Solutions of Tammes' and Thompson's Problem

University of Maryland ^**RIT on Geometry and Physics**

Co-host and presenter, 2014–present
see [the project web-site](#) for activity and presentations, current and archived.

General Scientific Community ^**Journal Referee**

Classical and Quantum Gravity (since 1986)
Acta Mathematica (since 2006)
Advances in Mathematical Physics (since 2011)
Advances in Theoretical and Mathematical Physics (since 2005)
Communications of Mathematical Physics (since 1990)
Foundations of Physics (2009)
International Journal of Modern Physics A (since 2014)
Journal of Geometry and Physics (2011)
Journal of High Energy Physics (since 2005)
Journal of Mathematical Physics (since 2010)
Journal of Physics A, G (since 1987)
Modern Physics Letters B (since 2013)
Nuclear Physics B (since 1992)
Physica A (since 1987)
Physica Scripta (since 2015)
Physics Letters B (since 98)
Physical Review D (since 1988)
Physical Review Letters (since 1989)
Symmetry (since 2015)
Universal Journal for Physics and Applications (since 2014)

Reviewer: Mathematical Reviews (1988–1997)

Proposal & Project Reviewer

American Institute of Physics/Physics Today Book Reviews (since 2014)
Chapman & Hall/CRC Press (since 2006)
CRC Press, Taylor & Francis Group (since 2021)
Ministry of Science, Education and Sports of the Republic of Croatia (since 2006)
Research Corporation for Science Advancement (since 2017)
University Science Books (since 2012)
U.S. Civilian Research and Development Foundation (since 2006)
Wiley-VCH GmbH (since 2022)

Co-organization

- “[GAP 2014: Geometry and Physics](#)” conference, May 29–31, 2014, at the [Pacific Institute for the Mathematical Sciences \(PIMS\)](#) of the [University of British Columbia in Vancouver](#), Canada
- “[Special Session on New Trends in Mathematical Physics](#)” of the 2024 Spring Eastern Sectional Meeting of the AMS, April 6–7, 2024, at [Howard University](#), Washington DC, USA

General Community ^

- [What is the Universe Made of?](#) (with K. Kumar)
ΦBK workshop for Washington DC Science Teachers; Howard University, Washington, DC, USA; 6/94.
Physics popularizing lectures with W.Pinkney, at the Oxon Hill High School, MD; 8/94
- Physics popularizing lectures at the Gibbs Elementary School Career Awareness Day, Washington DC; 3/96.
- Science project judging at the Harriet Tubman Elementary School Science Fair, Washington DC; 3/96.
- Physics popularizing lectures at the Greenbelt Elementary School Career Focus Day, Greenbelt MD; 3/98.
- Science demonstrations for the Science Discover Day, for Minority Women in Science, Washington DC Metropolitan Area Network; 3/00.
- [Prostor-vreme-materija, s pogledom u novi milenijum](#) (*Space-Time-Matter, with a View into the New Millennium*)
[popularizing article](#) in [Astronomija](#), University of Novi Sad, Serbia, 09/03.
- *(Super)Strings: A Theory of More Than Everything*
International Conference for Physics Students, Novi Sad, Serbia & Montenegro, 08/04.
- *Space-Time-Matter, at the Dawn of the Third Millennium*
Planetarium, Novi Sad, Serbia, 06/08.
- *From Superstrings and Things to Everything Else and Beyond*
2008 Goldman Lectures in Mathematical Physics, (public talk for general audience) University of Central Florida, Orlando, FL, 09/11/08.
- *Extra! Extra! Extra Dimensions! Room Enough for Many Worlds!*
Department of Physics, University of Central Florida, Orlando, FL, 09/17/09.
- *Discovering the Nucleus of the Indivisible Department of Physics*,
University of Central Florida, Orlando, FL, 09/29/11.
- [Božja čestica: delić koji nedostaje ili kost u grlu?](#) (*The God Particle: a Missing Piece or a Thorn in the Side?*)
Festival nauke, Novi Sad, 12–13 Maj 2012.
- *From Strings and Things to Everything Else and Beyond*
The Immanuel Christian School, Springfield VA, March 03, 2015
As a [host of the Nifty Fifty program](#)
- *From Strings and Things to Everything Else and Beyond*
The George Mason High School, Falls Church City, VA, December 11, 2015
As a [host of the Nifty Fifty program](#)
The Winston Churchill High School, Potomac, MD, February 25, 2016
- *The Building Blocks of the Theory of Everything*
Blessed Sacrament School, Alexandria VA, March 22, 2018
As a [host of the Nifty Fifty program](#)

Public Media ^

- [Extra! Extra! Extra Dimensions: Room Enough for Many Worlds!](#) (@YouTube)
- [2009 Goldman Lectures in Mathematical Physics](#), (public talk for general audience)

University of Central Florida, Orlando, FL, 09/11/09.

- Interview (Sept. 2009) in UCF's TV program [Zenith \(@YouTube\)](#); starting 6 minutes into the segment)
- Interview (May 2012) for RTV Vojvodina program “[Dijalog kultura](#)” by Drenka Dobrosavljević
Part 1: [[info](#) | [podcast-archive](#), [also here](#) | [@YouTube](#)]
Part 2: [[info](#) | [podcast-archive](#), [also here](#)]
- [Quora: answers by Tristan Hübsch](#)
- [Kako su naši prijatelji \(4\)](#) (Serbian; *How are Our Friends (4)*), *Astronomski Magazin*, 05/13/2020
- [Druga strana Tristana Hübscha](#) (Serbian; *The Other Side of Tristan Hübsch*), *Astronomski Magazin*, 08/30/2021

Financial Support ^

- 09/85–09/87: Research Assistant on a US National Science Foundation Grant (PI: J.C. Pati and J. Sucher), at University of Maryland, College Park, MD
- 09/87–09/88: Postdoctoral Research Associate on The US National Science Foundation Grants PHY8503890 (PI: P. Candelas) and PHY8605978 (P.I.: S. Weinberg), at University of Texas, Austin, TX
- 09/88–09/90: Postdoctoral Research Associate on The US National Science Foundation Grant PHY8605978 (PI: S. Weinberg), at University of Texas, Austin, TX
- 06/90–09/92: Postdoctoral Research Associate, by The US Department of Energy Grant DE-FG02-88ER-25065 (PI: S.-T. Yau), at Harvard University, Cambridge, MA
- 09/92–05/94: Consulting Research Associate on The US Department of Energy Grant DE-FG02-88ER-25065 (PI: S.-T. Yau), at Harvard University, Cambridge, MA
- 06/93–09/93: PI on the internal Faculty Research Support Grant Program *Simple Molecular Spectra and Supersymmetric Ground States*, at Howard University, Washington, DC.
- 10/93–12/93: Co-PI (PI: P. Misra) on a PEW Educational Trust Grant *Computer-Assisted Information Age Education for the Physics Department*, through the Graduate School of Howard University, Washington, DC.
- 10/94–09/96: Co-PI (PI: L. Klein, Co-PI: K. Kumar) on The US Defense Nuclear Agency Contract *High-Z Atomic Physics Model Development*, DNA001-94-C-0180 at Howard University, Washington, DC
- 09/96–08/99: Co-PI (PI: D. Venable, Co-PI: A. Batra) on The US Department of Education MSIP Grant *Computer-Aided Improvement of Introductory Physics Courses for Science Students*, at Howard University, Washington, DC.
- 06/94–05/12: PI on The US Department of Energy Grant *Superstrings and Quantum Superfields*, DE-FG02-94ER40854 at Howard University, Washington, DC.
- 07/ 99–06/00: PI on the Funds for Academic Excellence Grant Program award *Development of On-Line Learning Yardsticks: Interactive Evaluation and Self-Evaluation Instruments*, at Howard University, Washington, DC.
- 10/99–09/02: Co-PI (PI: D. Walton 99/00, Co-PI: A. Batra, 00-02) on The US Department of Education Grant *Distributed Education Workshop: Development of Web-Based and Computer-Aided Introductory Physics Course Content*, at Howard University, Washington, DC.
- 08/05–05/07: Co-PI (PI: G. Dunston, co-PI: F. Berezovskaya, J. Leslie and J. Trimble) on the HU Mordecai Wyatt Johnson Grant *Linking the Structure of DNA Sequence and Quantum Superstrings Using Topological and Dynamical Modeling, Simulation and Information Technology*, at Howard University, Washington, DC.

Publications [^]

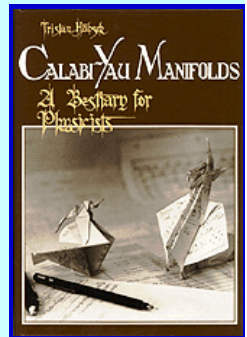
My Books:

Calabi-Yau Manifolds – A Bestiary for Physicists

(World Scientific, Singapore, 1992; hardcover)

+ 2nd, corrected and expanded edition, 1994, paperback: [[A](#)] [[B](#)] [[WSci](#), DOI:10.1142/1410] [[errata](#)]

Cover photograph by Donna D'Fini



for reviews, see: [Physics Today](#), 6/93, p. 93-94 (by E. Witten) and [Zentralblatt für Mathematik](#) 771 (1993) 53002 (by J.D. Zund) [[Zbl](#) 0771.53002]

An unsolicited opinion : “If you have ever wanted an explicit answer to the question, ‘What, exactly, is a Calabi-Yau manifold?’, this is the book you are looking for. Clear, far-ranging and full of brilliant insight, it is also a stylistic masterpiece, which is rare among math and physics books.” (rick1138, 11-04-2003, 11:39 PM; from [www.physicsforums.com](#) archive).

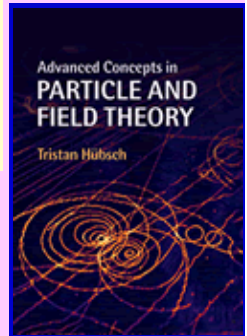
Also, see the [Amazon.com](#) review.



Fundamentalna fizika elementarnih čestica

(Fundamental Physics of Elementary Particles, in Serbian)

(Prirodno-matematički fakultet, Departman za fiziku, Novi Sad, 2011) [[ispravke](#)]



Advanced Concepts in Particle and Field Theory

(Cambridge University Press, July 31, 2015, harcover) [[CUP](#)] [[A](#)] [[B](#)] [[errata](#)] [[FAQ](#)]

Adapted from the [Publisher's web-site](#): Uniting particle physics and quantum field theory with gravity and general relativity, this textbook of fundamental and theoretical physics describes the quest to consolidate the basic building blocks of nature. Designed for advanced undergraduates and graduate students it provides a conceptually unified and logically consistent understanding of all matter at the fundamental level through worked examples, detailed derivations, as well as historical, philosophical and methodological commentary.

SELECTED PRESENTATIONS:

[QUEM-NAFEO Workshop: Learning to Research](#)

[Building Blocks of Supersymmetry](#)

[From Strings and Things to Everything Else, and Beyond](#)

[A Realistic Superstring-Inspired Brane-World Cosmology](#)

[Extra! Extra! Extra Dimensions! Room Enough for Many Worlds!](#) also: [@YouTube](#)

[Novel Calabi-Yau \$n\$ -Fold Features and Constructions](#) [[interactive](#)] [[static](#)]

ARTICLES ([@](#) = refereed, [i](#) = invited. Except in [[L.01](#)] and [[Q.02](#)], all co-authors are listed alphabetically):

Elementary Particle (i.e., Fundamental) Physics [^]

[[E.01](#)] “Minimization of Higgs Potentials with Application to the SU(5) model”





- T. Hübsch, S. Meljanac and S. Pallua: in Trieste 1983 Proceedings of Group Theoretical Methods in Physics, p. 186.
- Ⓜ[E.02] “Symmetry Breaking Mechanism in an Alternative SU(5) model”
T. Hübsch and S. Pallua: *Phys. Lett.* **138B** (1984) 279.
- Ⓜ[E.03] “Symmetry Breaking of SU(n) Gauge Theories to Maximal Regular Subgroups”
T. Hübsch, S. Meljanac and S. Pallua: *Phys. Rev.* **D31** (1985) 352.
- Ⓜ[E.04] “A Non-minimal SU(5) Model”
T. Hübsch, S. Meljanac and S. Pallua: *Phys. Rev.* **D31** (1985) 2958.
- Ⓜ[E.05] “Invariants of Self-adjoint Rank-four SU(n) Tensors”
T. Hübsch, S. Meljanac and S. Pallua: *Phys. Rev.* **D32** (1985) 1021.
- Ⓜ[E.06] “The Missing Multiplet Mechanism and 75 Breaking of Supersymmetric SU(5)”
T. Hübsch, S. Meljanac, S. Pallua and G. G. Ross: *Phys. Lett.* **161B** (1985) 122.
- Ⓜ[E.07] “Do Superstrings Lead to Quarks or Preons?”
T. Hübsch, H. Nishino and J. C. Pati: *Phys. Lett.* **163B** (1985) 111.
- Ⓜ[E.08] “Grand Unification of Three Light Generations”
D. Chang, T. Hübsch and R. N. Mohapatra: *Phys. Rev. Lett.* **55** (1985) 673.
- Ⓜ[E.09] “Symmetry Breaking Patterns in QCD with 27 Scalars”
T. Hübsch and S. Meljanac: *Phys. Rev.* **D33** (1986) 1429; erratum: *Phys. Rev.* **D34** (1986) 3536
- Ⓜ[E.10] “Economical Unification of Three Generations in SO(18)”
T. Hübsch and P. B. Pal: *Phys. Rev.* **D34** (1986) 1606.
- Ⓜ[E.11] “Calabi-Yau Manifolds - Motivations and Constructions”
T. Hübsch: *Comm. Math. Phys.* **108** (1987) 291–318.
- [E.12] “Preons from Superstrings”
T. Hübsch: in *Cosmology and High Energy*, p. 193, ed. E. Esteban (Univ. of Puerto Rico, Humacao, 1986)
- Ⓜ[E.13] “Calabi-Yau Manifolds as Complete Intersections in Products of Projective Spaces”
P. Green and T. Hübsch: *Comm. Math. Phys.* **109** (1987) 99–108.
- [E.14] “Constructions of Calabi-Yau Manifolds”
T. Hübsch: in *Superstrings, Anomalies and Unification*, p. 495, eds. M. Martinis and I. Andric (World Scientific, Singapore, 1987).
- [E.15] “Unique Heterotic Preons?”
T. Hübsch and J. C. Pati: University of Maryland Report PP86–199 (1986).
- [E.16] “Manifold Compactification of Superstrings”
T. Hübsch: in *Superstrings, Unified Theories and Cosmology*, p. 274, eds. G. Furlan et al. (World Scientific, Singapore, 1987).
- Ⓜ[E.17] “Polynomial Deformations and Cohomology of Calabi-Yau Manifolds”
P. Green and T. Hübsch: *Comm. Math. Phys.* **113** (1987) 505–528.
- Ⓜ[E.18] “Calabi-Yau Hypersurfaces in Products of Semi-Ample Surfaces”
P. Green and T. Hübsch: *Comm. Math. Phys.* **115** (1988) 231–246.
- [E.19] “Superstring Phenomenology and Cohomology on Calabi-Yau Manifolds”
T. Hübsch: in *Superstrings, Unified Theories and Cosmology 1987*, p. 164, eds. G. Furlan et al. (World Scientific, Singapore, 1988).
- Ⓜ[E.20] “Flux-Lines Through Calabi-Yau Manifolds and Related Couplings”
T. Hübsch: *J. Phys.* **A21** (1988) 3051–3061.
- Ⓜ[E.21] “All the Hodge Numbers for All Calabi-Yau Complete Intersections”
P. Green, T. Hübsch and C. A. Lütken: *Class. Q. Grav.* **6** (1989) 105–124.
- Ⓜ[E.22] “Connecting Moduli Spaces of Calabi-Yau Threefolds”
P. Green and T. Hübsch: *Comm. Math. Phys.* **119** (1988) 431–441.

- Ⓜ[E. 23] “Possible Phase Transitions Among Calabi-Yau Compactifications”
P. Green and T. Hübsch: *Phys. Rev. Lett.* **61** (1988) 1163–1166.
- Ⓜ[E. 24] “ $(1,1)^3$ Couplings in Calabi-Yau Threefolds”
P. Green and T. Hübsch: *Class. Q. Grav.* **6** (1989) 311–327.
- Ⓜ[E. 25] “Finite Distances Between Distinct Calabi-Yau Manifolds”
P. Candelas, P. Green and T. Hübsch: *Phys. Rev. Lett.* **62** (1989) 1956–1959.
- [E. 26] “Connected Calabi-Yau Compactifications”
P. Candelas, P. Green and T. Hübsch: in *Strings '88*, p. 155 eds. S. J. Gates, Jr., C. R. Preitschopf and W. Siegel (World Scientific, Singapore, 1989).
- [E. 27] “Natural Origin of Inflation within a Class of Supersymmetric Preon Models”
M. Cvetič, T. Hübsch, J. C. Pati and H. Stremmnitzer: in *Proc. of XXIV International Conference on High Energy Physics München, Aug. 4–10, 1988*, p. 1538 eds. R. Kotthaus and J. H. Kühn (Springer Verlag, Berlin, 1989).
- Ⓜ[E. 28] “Natural Origin of Inflation within a Class of Supersymmetric Preon Models”
M. Cvetič, T. Hübsch, J. C. Pati and H. Stremmnitzer: *Phys. Rev.* **D40** (1989) 1311.
- Ⓜ[E. 29] “Unidexterous Locally Supersymmetric Actions for Calabi-Yau Compactifications”
S. J. Gates, Jr. and T. Hübsch: *Phys. Lett.* **226B** (1989) 100–106.
- Ⓜ[E. 30] “Rolling Among Calabi-Yau Vacua”
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For those who know what this means, my Erdős number is 3, via my collaboration with Shing-Tung Yau [E.44, 45, 46], and my Witten number is 2, via my collaboration with Philip Candelas [E.25, 26, 30, 31, 32, 50, 53]. If you are interested to know how much other researchers care to cite the research I have published, see my [inSPIRE publication footprint](#), [Scopus/Elsevier profile](#), [Semantic Scholar profile](#), [ORCID record](#), or [Google Scholar profile](#).

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