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## Curriculum Vitae

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Prof. Tao Liu

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## Education

- Ph.D. in Physics: University of Pennsylvania, 05/2007  
Thesis: “ **Aspects of Flux Compactification** ”  
Thesis Advisor: Professor Mirjam Cvetič
- M.S. in Physics: University of Pennsylvania, 08/2002
- B.S. in Physics: University of Science and Technology of China (USTC), 06/2000

## Professional Experience

- Assistant professor, 02/2013–present, Hong Kong University of Science and Technology
- Postdoctoral fellow, 08/2010–01/2013, University of California at Santa Barbara
- Postdoctoral fellow (**McCormick Fellow**), 08/2007–07/2010, Enrico Fermi Institute (EFI), University of Chicago
- Ph. D. graduate student, 07/2000–07/2007, University of Pennsylvania
- Undergraduate Student, 09/1995–06/2000, USTC, P. R. China

## Honors and Awards

- McCormick Fellowship (08/2007 – 07/2010), EFI, University of Chicago  
For outstanding research achievement
- Procter & Gamble Award, USTC, 09/1999  
For outstanding academic performance
- “Legend(Lenovo)” Award, USTC, 09/1998  
For outstanding academic performance

- Excellent Student Scholarship, USTC, 09/1997  
For outstanding academic performance

### Professional Service

- Referee for Physical Review Letters, Physical Review **D**, Journal of High Energy Physics, European Physical Journal **C**, Physics Letters **B**, and International Journal of Modern Physics **A**
- Member of the Ninth Session Committee  
Chinese Physical Society (High Energy Physics Division), Mar, 2014 - present
- Co-convener  
“Higgs Physics” session of the Conceptual Design Report for the “Circular Electron-Positron Collider (CEPC) and Super Proton-Proton Collider (SPPC)” program <sup>1</sup>
- Co-scientific advisor  
the “*Particlegenesis*” workshop at the Kavli Institute for Theoretical Physics(KITP)  
KITP, UC Santa Barbara, California, May-June, /2014
- Co-organizer  
“*Shanghai Particle Physics and Cosmology Symposium 2014*”  
May, 2014, Shanghai, China
- Co-coordinator  
the “*Dark Matter and New Physics*” workshop at the Kavli Institute for Theoretical Physics in China (KITPC)  
KITPC, Beijing, 08-09/2013
- Co-organizer  
the workshop “*Frontier Physics Working Month 2011*”,  
Peking University / Shanghai Jiao Tong University, 05/2011-6/2011
- Co-organizer  
the West Coast LHC Theory Network Meeting “*LHC-2011: Exp/Theo Progress and Prospects*”,  
University of California at Santa Barbara, 04/2011
- Co-convener  
the “*Higgs and Extensions*” Session, “*Muon Collider Physics*” Workshop  
Fermi National Accelerator Laboratory, 11/2009

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<sup>1</sup>This is a 40-years-long scientific program which involves the construction of a Higgs machine (CEPC) and a next-generation proton-proton collider (SPPC) within next decades. The energy scale of the SPPC is expected to be 50~100 TeV vs. 14 TeV of the Large Hadron Collider.

- Convener  
the “*Flavor Physics*” Session, 2009 Phenomenology Symposium,  
University of Wisconsin, Madison, 05/2009

### Research Interests / Research Fields

- Physics beyond the Standard Model
- LHC (and future collider) physics
- Particle cosmology
- String phenomenology

### Invited (Conference and Seminar) Talks, Lectures and Colloquia

- “*After the Discovery: Hunting for a Non-Standard Higgs Sector*” program, Benaque, Spain, 04/2014  
Talk presented: “Exotic Decays of the 125 GeV Higgs Boson - A Theoretical Overview”
- Hong Kong University, Hong Kong, 12/2013  
Talk presented: “Higgs Physics within Next Decade and the Chinese Collider Program”
- University of Science and Technology, Hefei, 09/2013  
Talk presented: “Exotic Decays of the 125 GeV Higgs”
- UC San Diego, 08/2013  
Talk presented: “Exotic Decays of the 125 GeV Higgs”
- “International Symposium of Higgs Physics, Institute of High Energy Physics, Beijing, 08/2013  
Talk presented: “Exotic Decays of the 125 GeV Higgs”
- Caltech, Pasadena, 06/2013  
Talk presented: “Supersymmetric Exotic Higgs Decays”
- “Shanghai Particle Physics and Cosmology Symposium 2014”, Shanghai, China, 06/2013  
Talk presented: “Exotic Higgs Decays”
- “*The 7th Asian Winter School on Strings, Particles and Cosmology*”, Institute of Theoretical Physics, Chinese Academy of Sciences, Beijing, 02/2013  
Lectures presented: “Higgsology”

- Shanghai Jiao Tong University, P. R. China, 08/2012  
Talk presented: “125GeV Higgs Boson and Enhanced Di-photon Rate”
- TRIUMF, Canada, 06/2012  
Talk presented: “A Supersymmetric View of Higgs Hunting”
- Perimeter Institute for Theoretical Physics, Canada, 06/2012  
Talk presented: “A Supersymmetric View of Higgs Hunting”
- Department of Physics, The Hong Kong University of Science and Technology, Hong Kong, 03/2012  
Talk presented: “A Supersymmetric View of Higgs Hunting”
- University of Sydney, Australia, 01/2012  
Talk presented: “Hunting for the Higgs”
- University of Notre Dame, 01/2012  
Talk presented: “Hunting for the Higgs”
- Ohio State University, 01/2012  
Talk presented: “Hunting for the Higgs”
- Institute for Advanced Study, The Hong Kong University of Science and Technology, Hong Kong, 12/2011  
Talk presented: “Hunting for the Higgs”
- Institute of Theoretical Physics, Chinese Academy of Sciences, China, 12/2011  
Talk presented: “Hunting for the Higgs”
- The Interdisciplinary Center for Theoretical Study, University of Science and Technology of China, China, 12/2011  
Colloquium: “Hunting for the Higgs”
- University of College London, United Kingdom, 12/2011  
Talk presented: “Hunting for the Higgs”
- William I. Fine Theoretical Physics Institute, University of Minnesota, 12/2011  
Talk presented: “Dark Light Higgs - A New Paradigm for Light Dark Matter and Nonstandard Higgs Physics”
- DØ collaboration, Fermi National Accelerator Laboratory, 09/2011  
Talk presented: “A Polarized View of Top Asymmetry”
- University of California, Irvine, 03/2011  
Talk presented: “Dark Light Higgs”

- Santa Cruz Institute for Particle Physics, University of California, Santa Cruz, 01/2011  
Talk presented: “Dark Light Higgs”
- Kavli Institute for Theoretical Physics, University of California, Santa Barbara, 01/2011  
Talk presented: “Dark Light Higgs”
- University of California, Santa Barbara, 10/2010  
Talk presented: “Prospects for Higgs Searches at the Tevatron and Run III Project”
- University of Wisconsin, Madison, 02/2010  
Talk presented: “Electroweak Baryogenesis in Supersymmetric  $U(1)'$  Models”
- Joint Seminar at Tevatron New Phenomena & Higgs Working Group (CDF + DØ), Fermi National Accelerator Laboratory, 12/2009  
Talk presented: “Prospects for MSSM Higgs Searches at the Fermilab Tevatron”
- Theoretical Physics Department, Fermi National Accelerator Laboratory, 12/2009  
Talk presented: “Prospects for MSSM Higgs Searches at the Fermilab Tevatron”
- Michigan State University, 12/2009  
Talk presented: “Prospects for MSSM Higgs Searches at the Fermilab Tevatron”
- University of California, Berkeley, 09/2009  
Talk presented: “Prospects for MSSM Higgs Searches at the Fermilab Tevatron”
- University of California, San Diego, 09/2009  
Talk presented: “Prospects for MSSM Higgs Searches at the Fermilab Tevatron”
- University of Pennsylvania, 09/2009  
Talk presented: “Prospects for MSSM Higgs Searches at the Fermilab Tevatron”
- University of California, San Diego, 03/2009  
Talk presented: “Family Non-universal  $U(1)'$  Gauge Symmetries and  $b \rightarrow s$  Transitions”
- University of California, Irvine, 03/2009  
Talk presented: “Family Non-universal  $U(1)'$  Gauge Symmetries and  $b \rightarrow s$  Transitions”
- Northwestern University, 03/2009  
Talk presented: “Family Non-universal  $U(1)'$  Gauge Symmetries and  $b \rightarrow s$  Transitions”

- Argonne National Laboratory, 04/2008  
Talk Presented: “Dynamical Solution to the  $\mu/B_\mu$  Problem in Gauge-mediated SUSY Breaking”
- University of Chicago, 09/2007  
Talk presented: “Electroweak Baryogenesis in Supersymmetric  $U(1)'$  Models”
- Peking University, China, 01/2007  
Talk presented: “The Geometric Discreteness and Stability of Vacua and Blowing-up Modes”

### General Conference and Workshop Presentations

- “Chinese Physical Society Meeting (High Energy Physics Division) 2014”, Wuhan, China, 04/2014  
Talk presented: “Exotic Decays of the 125 GeV Higgs Boson”
- “1st CFHEP Symposium on circular collider physics”, Institute of High Energy Physics, Beijing, 02/2014  
Talk presented: “Higgs Physics at the CEPC-SPPC”
- Shanghai Jiao Tong University Working Group Meeting, P. R. China, 01/2014  
Talk presented: “Exotic Decays of the 125 GeV Higgs”
- “Dark Matter and New Physics” workshop, Kavli Institute for Theoretical Physics in China, Beijing, 09/2013  
Talk presented: “Exotic Decays of the 125 GeV Higgs”
- “Implications of LHC Higgs-like Signals” Aspen workshop, 08/2013  
Talk presented: “Exotic Decays of the 125 GeV Higgs”
- “Snowmass Energy Frontier Workshop 2013”, University of Washington, Seattle, 07/2013  
Talk presented: “Exotic Higgs Decays - An Overview”
- “Higgs ID” workshop, Kavli Institute for Theoretical Physics, University of California, Santa Barbara, 12/2012  
Talk presented: “Modified Higgs Di-photon Coupling - From LHC to ILC”
- SUSY 12, Peking University, P.R.China, 08/2012  
Talk presented: “125 GeV Higgs Boson, Enhanced Di-photon Rate, and Gauged  $U(1)_{PQ}$ -Extended MSSM”

- “LHC Now” Santa Fe 2012 summer workshop, Los Alamos National Laboratory, 07/2012  
Talk presented: “125 GeV Higgs Boson, Enhanced Di-photon Rate, and Gauged  $U(1)_{PQ}$ -Extended MSSM”
- “Frontier Physics Working Month 2011” workshop, Peking University / Shanghai Jiao Tong University, P. R. China, 05/2010  
Talk presented: “Dark Light Higgs”
- “Electroweak Symmetry Breaking” workshop, University of Wisconsin, Madison, 05/2011  
Talk presented: “Electroweak Baryogenesis - from CP Violation in  $b \rightarrow s$  Transitions to Baryon Asymmetry in the Universe”
- 2011 Phenomenology Symposium, University of Wisconsin, Madison, 05/2011  
Talk presented: “Top Asymmetry at the Early LHC”
- “Frontier Physics Working Month 2010” workshop, Peking University / Shanghai Jiao Tong University, P. R. China, 06/2010  
Talk presented: “Prospects for Higgs Searches at the Tevatron and Run III Project”
- “Beyond the Standard Model Physics at the Threshold”, 2009 Summer Workshop at the Aspen Center for Physics, Colorado, 07/2009  
Talk presented: “Prospects for MSSM Higgs Searches at the Fermilab Tevatron”
- SUSY 09, Northeastern University, 06/2009  
Talk presented: “Family Non-universal  $U(1)'$  Gauge Symmetries and  $b \rightarrow s$  Transitions”
- “Collider Physics 2009: Joint Argonne & IIT Theory Institute”, 05/2009  
Talk presented: “Family Non-universal  $U(1)'$  Gauge Symmetries and  $b \rightarrow s$  Transitions”
- 2009 Phenomenology Symposium, University of Wisconsin, Madison, 05/2009  
Talk presented: “Family Non-universal  $U(1)'$  Gauge Symmetries and  $b \rightarrow s$  Transitions”
- Cosmo 08, University of Wisconsin, Madison, 08/2008  
Talk presented: “Electroweak Baryogenesis in Supersymmetric  $U(1)'$  Models”
- String Phenomenology 08, University of Pennsylvania, 06/2008  
Talk Presented: “Dynamical Solution to the  $\mu/B_\mu$  Problem in Gauge-mediated SUSY Breaking”

- 2008 Phenomenology Symposium, University of Wisconsin, Madison, 04/2008  
Talk Presented: “Dynamical Solution to the  $\mu/B_\mu$  Problem in Gauge-mediated SUSY Breaking”

### Outreach Activities and Public Talks

- Diocesan Boy’s School, 03/2014  
Talk Presented: “Exploring the Secrets of Dark Matter”
- Pan Pearl River Delta Physics Olympiad, Shenzhen, 02/2014  
Talk Presented: “Exploring the Secrets of Dark Matter”
- 2014 MTM Open Day, School of Science, Hong Kong University of Science and Technology, 01/2014  
Talk Presented: “Exploring the Secrets of Dark Matter”
- Information Day 2013, School of Science, Hong Kong University of Science and Technology, 09/2013  
Talk Presented: “Exploring the Secrets of Dark Matter”
- “Popular Physics Talk”, Department of Physics, Hong Kong University of Science and Technology, 04/2013  
Talk Presented: “From Big Bang to Large Hadron Collider”

### Publication List (Including Articles under Review)

- “Supersymmetric Sub-Electroweak Scale Dark Matter, the Galactic Center Gamma-ray Excess, and Exotic Decays of the 125 GeV Higgs Boson”,  
arXiv:1407.0038 [hep-ph], submitted to **Phys. Rev. D**;  
J. Huang, T. Liu, L. -T. Wang and F. Yu
- “Exotic Decays of the 125 GeV Higgs Boson”,  
arXiv:1312.4992 [hep-ph], submitted to **Phys. Rev. D**;  
D. Curtin, R. Essig, S. Gori, P. Jaiswal, A. Katz and T. Liu *et al.*
- “Supersymmetric Exotic Decays of the 125 GeV Higgs Boson”,  
*Phys. Rev. Lett.* **112**, 221803 (2014) arXiv:1309.6633 [hep-ph];  
J. Huang, T. Liu, L. -T. Wang and F. Yu
- “Unraveling The Physics Behind Modified Higgs Couplings – LHC vs. a Higgs Factory”,  
**Phys. Rev. D** **88**, 095003 (2013), arXiv:1301.2324 [hep-ph];  
S. B. Giddings, T. Liu, I. Low and E. Mintun



- “Multiple b-jets Reveal Top Superpartners and the 125 GeV Higgs”,  
**Phys. Rev. D** **87**, no. 11, 115004 (2013), arXiv:1211.4288 [hep-ph];  
D. Berenstein, T. Liu and E. Perkins
- “125 GeV Higgs Boson, Enhanced Di-photon Rate, and Gauged  $U(1)_{PQ}$ -Extended MSSM”,  
**Phys. Rev. D** **86**, 075030 (2012), arXiv:1207.2473 [hep-ph];  
H. An, T. Liu and L. -T. Wang
- “Electroweak Baryogenesis: From  $b \rightarrow s$  CP-violation to the Cosmic Baryon Asymmetry”,  
**Phys. Rev. Lett.** **108** (2012) 221301, arXiv:1109.4145 [hep-ph];  
T. Liu, M. J. Ramsey-Musolf and J. Shu.
- “The 7 TeV LHC Reach for MSSM Higgs Bosons”,  
**Phys. Rev. D** **84**, 095010 (2011), [arXiv:1107.4354 [hep-ph]];  
M. Carena, P. Draper, T. Liu, C. E. M. Wagner
- “A Polarized View of the Top Asymmetry”,  
**Phys. Rev. D** **84**, 074034 (2011), arXiv:1105.3743 [hep-ph];  
D. Krohn, T. Liu, J. Shelton and L. T. Wang.
- “Probing the Higgs Sector of High-Scale SUSY-Breaking Models at the Tevatron”,  
**Phys. Rev. D** **83**, 055007 (2011) arXiv:1011.5304 [hep-ph];  
M. Carena, P. Draper, S. Heinemeyer, T. Liu, C. E. M. Wagner and G. Weiglein.
- “Dark Light-Higgs Bosons”,  
**Phys. Rev. Lett.** **106**, 121805 (2011) arXiv:1009.3963 [hep-ph];  
P. Draper, T. Liu, C. E. M. Wagner, L. T. Wang and H. Zhang.
- “Higgs Boson Search Sensitivity in the  $H \rightarrow WW$  Dilepton Decay Mode at  $\sqrt{s} = 7$  and 10 TeV”,  
**Phys. Rev. D** **82**, 053003 (2010), arXiv:1003.3875 [hep-ph];  
E. L. Berger, C.-H. Cao, C. B. Jackson, T. Liu and G. Shaughnessy.
- “Phenomenological Implications of Supersymmetric Family Non-universal  $U(1)'$  Models”,  
**Phys. Rev. D** **80**, 055008 (2009), arXiv:0911.5349 [hep-ph];  
L. Everett, J. Jiang, P. Langacker and T. Liu.
- “Electroweak Baryogenesis, CDM and Anomaly-free Supersymmetric  $U(1)'$  Models”,  
**JHEP** **1104**, 097 (2011), arXiv:0911.2939 [hep-ph];  
J. Kang, P. Langacker, T. j. Li and T. Liu.

- “Prospects for Higgs Searches at the Tevatron and LHC in the MSSM with Explicit CP-violation”,  
**Phys. Rev. D** **81**, 015014 (2010), arXiv:0911.0034 [hep-ph];  
 P. Draper, T. Liu and C. E. M. Wagner.
- “ $b \rightarrow s$  Transitions in Family-dependent  $U(1)'$  Models”,  
**JHEP** **0912**, 048 (2009), arXiv:0906.3745 [hep-ph];  
 V. Barger, L. L. Everett, J. Jiang, P. Langacker, T. Liu and C. E. M. Wagner.
- “Prospects for MSSM Higgs Searches at the Tevatron”,  
**Phys. Rev. D** **80**, 035025 (2009), arXiv:0905.4721 [hep-ph];  
 P. Draper, T. Liu and C. E. M. Wagner.
- “Family Non-universal  $U(1)'$  Gauge Symmetries and  $b \rightarrow s$  Transitions”,  
**Phys. Rev. D** **80**, 055008 (2009), arXiv:0902.4507 [hep-ph];  
 V. Barger, L. Everett, J. Jiang, P. Langacker, T. Liu and C. Wagner.
- “Dynamically Solving the  $\mu/B_\mu$  Problem in Gauge-mediated Supersymmetry Breaking”,  
**JHEP** **0806**, 073 (2008), arXiv:0803.2895 [hep-ph];  
 T. Liu and C. E. M. Wagner.
- “Twisting  $K3 \times T^{**2}$  Orbifolds”,  
**JHEP** **0709**, 092 (2007), [arXiv:hep-th/0701204];  
 M. Cvetič, T. Liu and M. B. Schulz.
- “Classification of Supersymmetric Flux Vacua in M theory”,  
**Nucl. Phys. B** **749**, 25 (2006), [arXiv:hep-th/0512032];  
 K. Behrndt, M. Cvetič and T. Liu.
- “Standard-like Models as Type IIB Flux Vacua”,  
**Phys. Rev. D** **71**, 106008 (2005), [arXiv:hep-th/0501041];  
 M. Cvetič, T. Li and T. Liu.
- “Supersymmetric Standard models, Flux Compactification and Moduli Stabilization”,  
**Phys. Lett. B** **610**, 122-128 (2005). [hep-th/0409032];  
 M. Cvetič and T. Liu.
- “D6-brane Splitting on Type IIA Orientifolds”,  
**Nucl. Phys. B** **709**, 241 (2005), [arXiv:hep-th/0407178];  
 M. Cvetič, P. Langacker, T. j. Li and T. Liu.

- “Supersymmetric Pati-Salam Models from Intersecting D6-branes: A Road to the Standard Model”,  
**Nucl. Phys. B** **698**, 163 (2004), [arXiv:hep-th/0403061];  
M. Cvetič, T. j. Li and T. Liu.
- “Electroweak Baryogenesis in a Supersymmetric U(1) Model”,  
**Phys. Rev. Lett.** **94**, 061801 (2005), [arXiv:hep-ph/0402086];  
J. Kang, P. Langacker, T. j. Li and T. Liu.
- “Quasi-Supersymmetric G(3) Unification from Intersecting D6-branes on Type IIA Orientifolds”,  
**Phys. Lett. B** **573**, 193 (2003), [arXiv:hep-th/0304258];  
T. j. Li and T. Liu.
- “Deconstruction of Gauge Symmetry Breaking by Discrete Symmetry and  $G^N$  Unification”,  
**Eur. Phys. J. C** **28**, 545 (2003), [arXiv:hep-th/0204128];  
T. j. Li and T. Liu.