Yuan-Pao Yang

2515 Speedway, C1600, Austin, TX 78712-1192 ‧ 512-415-1369 ‧ yjp1986@utexas.edu

# PROFILE

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| * Ph.D. in theoretical high energy physics (Expected 05/2019) |
| * B.S. in mathematics. Strong skill with advanced calculus, linear algebra, differential equations, and probability theory, and geometry. |
| * Advanced training in Statistics, including statistical inferences, regression analysis, and stochastic processes. |
| * 7-year quantitative research experiences with c++ and python; familiar with Matlab, Mathematica and SAS. |
| * Self-motivated learner and passionate problem-solver |

# EDUCATION

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| **Doctor of Philosophy in Physics**‧University of Texas at Austin | Expected 05/2019 |
| Field: Theoretical High Energy Physics  Dissertation: Improving Mass Determination and Other Precision Measurements Related to New Physics Current GPA: 3.93/4.00 | |

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| **Master of Science in Physics**‧National Taiwan University | 06/2012 | |
| Field: Experimental High Energy Physics  Thesis: Measurement of cross-section between 10750 and 11050 MeV |  |

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| **Bachelor of Science in Mathematics**‧National Taiwan University  **Bachelor of Science in Physics** | 06/2009 |
| Dean’s Award (Top 10% GPA) | |

# RESEARCH EXPERIENCE

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| **Graduate Research Assistant**‧University of Texas at Austin | 12/2013 – present |
| * Modeled how measurements in high energy physics experiments are effected by detector uncertainties and particle misidentification with probability theory, stochastic processes, and Monte Carlo simulation, and used maximum likelihood estimation or other optimization method to infer other physics quantities including particle masses. * Created feather from high energy physics experiment measurements with linear algebra, geometry and Voronoi tessellation, and studied their feature importance for decay process classification with statistic test hypothesis as well as different types of machine learning algorithms including artificial neural network and boosted decision trees. * Built ATLAS official multilepton Monte Carlo simulation dataset for LHC pre-Run2 study. | |

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| **Graduate Research Assistant**‧National Taiwan University | 06/2010 – 06/2012 |
| * Performed regression model on collider data to estimate physics quantities including particle masses and widths. * Rejected the existence of the hypothesized particle Yb(10900) with statistic test hypothesis. | |

# ACTIVITIES

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| **Kaggle**, online data competitions |
| * Built and stacked models including Neural Network, Gradient Boosting Tree, and Naïve Bayes to train on 600 thousand data points and rank the probability of claiming insurance for drivers. * Built time series models to train on a 5-year sales record and forecast the sales of 4000 items in 57stores for the following 2 weeks. |

# PUBLICATIONS

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| * D. Debnath, J. S. Gainer, C. Kilic, D. Kim, K. T. Matchev, Y.-P. Yang,“ Detecting kinematic boundary surfaces in phase space: particle mass measurements in SUSY-like events” , *JHEP 06(2017)092,* [arXiv:1611.04487](https://arxiv.org/abs/1611.04487) |
| * M. D. Klimek and Y.-P. Yang, “Mass Reconstruction for High Multiplicity Final States Using the Boundary of Phase Space”, [*in Proceedings of the "Fourth Annual Large Hadron Collider Physics"*, PoS(LHCP2016)221](https://pos.sissa.it/archive/conferences/276/221/LHCP2016_221.pdf) |
| * D. Debnath, J. S. Gainer, C. Kilic, D. Kim, K. T. Matchev, Y.-P. Yang, “Identifying Phase Space Boundaries with Voronoi Tessellations”, [*Eur. Phys. J.* **C76** no. 11, (2016)645](https://link.springer.com/article/10.1140/epjc/s10052-016-4431-z), [arXiv:1606.02721](https://arxiv.org/abs/1606.02721) |
| * D. Santel, K. Kinoshita, P. Chang, *et al*. “Measurements of the(10860) and(11020) resonances via σ(e+e−→(nS)π+π−)”, [*Phys. Rev. D* **93**, 011101](https://journals.aps.org/prd/abstract/10.1103/PhysRevD.93.011101), [arXiv: 1501.01137](https://arxiv.org/abs/1501.01137) |
| * Yuan-Pao Yang, “Measurement of cross-section between 10750 and 11050 MeV”, *M.S. Thesis, National Taiwan University*, Taipei, 2012 |

# PRESENTATION

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| “Mass Reconstruction for High Multiplicity Final States Using the Boundary of Phase Space”  **PPC 2017**, TAMU Corpus Christi, Corpus Christi, TX | 05/23/2017 |
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| “Improving mass measurement in cascade decay with Voronoi tessellations”  **MC4BSM Work Shop**, SLAC, Menlo Park, CA | 05/12/2017 |
| “ cross section measurement of Belle 2010 scan”  **Belle Analysis Meeting,** KEK, Tsukuba, Japan | 02/24/2012 |