

TONG SHEN

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EDUCATION

09/2020 – Present **Department of Physics, Fudan University, China**
Bachelor of Science in Physics
(Expected graduation: 07/2024)

RESEARCH INTERESTS

- The application of machine learning in collider physics
- Standard Model Effective Field Theory and Phenomenology

RESEARCH EXPERIENCE

06/2023 – Now **Machine-Learned Jet Time and Trackless Jet Vertexing**
Writing paper stage Advisor: Prof. [Zhen Liu](#), University of Minnesota
We show that precision timing information of the jet constituents in conjunction with machine learning allows for a more precise definition of jet time and also an independent reconstruction of displaced vertex for trackless jets. This highlights the power and the importance of timing information for jets in colliders, which is complementary to tracking information and uniquely the leading observable for heavy neutral long-lived particles

04/2023 – Now **Machine Learning Approach for Top Quark Effective Theory**
Ongoing Advisor: Prof. [Jiayin Gu](#), Fudan University
We focus on the effective field theory which may influence the generation and decay of top quark in future collider. Machine learning techniques are applied to analyze the data generated by Madgraph and detector simulations. We use the likelihood score as the target function and fisher information as the evaluation method. This can estimate a constraint on the coefficient of effective theory

02/2022 – 06/2022 **AdS/CFT Duality**
Advisor: Prof. [Yang Zhou](#), Fudan University
Review the correspondence between field theories and string theory. Focus on the relation between compactifications of string theory on Anti-de Sitter spaces and conformal field theories
Group work for the honors course in Methods of Mathematical Physics.
Grade A

COURSES & SEMINAR

Advanced Course: Gauge Field Theory (Grade A), Quantum Field Theory (Grade A),
(by 12/2023 only) Particle Physics (Grade A), Group Theory in Physics,
Quantum Information

Self-learned Course: Machine Learning, Online course by Hung-Yi Lee,
National Taiwan University

Seminar: Lecture on Soft-Collinear Effective Theory by Prof. [Dingyu Shao](#),
Fudan University
Journal club with faculty in School of Physics and Astronomy,
University of Minnesota

LANGUAGE & SKILLS

English: Proficiency, TOEFL: 104

Programming: Python, C/C++, Mathematica, Latex

Skills: Deep learning, Collider Event generation, Numerical simulations
Monte Carlo method

AWARDS & HONORS

10/2022 Physics Major Scholarship, Fudan University

12/2019 Bronze Medal, The 33rd Chinese Chemistry Olympiad (Final)