Saiyang Zhang

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Education

2020 - present **University of Texas at Austin, TX**
Ph.D. candidate in Physics
Cumulative GPA: 3.84.

2015 - 2019 **Colgate University, NY**
B.A., Astronomy/Physics with honors, 2019.
B.A., Applied Mathematics, 2019.
Cumulative GPA: 3.77, Major GPA: 3.86 and 3.93.

Research

2022–current **University of Texas at Austin, Advisor: Volker, Bromm**
Project: *Imprints of the Primordial Black Holes over Cosmic History*

2021–2024 **University of Texas at Austin, Advisor: Katherine, Freese**
Project: *Detection of the Dark Stars by JWST/Roman Telescopes*

2018–2020 **Colgate University, Advisor: Cosmin, Ilie**
Project: *Dark Matter Capture by Massive Objects*

2017 **Colgate University, Advisor: Enrique, Galvez**
Project: *Polarization of Gaussian Beams*

2016 **Colgate University, Advisor: Thomas, Balonek**
Project: *Optical Variability of Quasars*

Associations

2016- **American Physical Society (APS)**

2015-2019 **American Mathematical Society (AMS)**

Presentation

Nov. 2024	**CFC-CCA Workshop, University of Texas, Austin, TX**
	Title: *The Imprint of Primordial Black Holes over Cosmic History*
Oct. 2024	**TEPAPP seminar (Invited), Univeristy of California, Los Angeles, CA**
	Title: *Primordial Black Holes as Potential Seed for Supermassive Black Holes*
	Astrophysics Seminar, University of California, Riverside, CA
	Title: *The Imprint of Primordial Black Holes over Cosmic History*
Jul. 2024	**Seventeenth Marcel Grossmann Meeting (Invited), Italy**
	Title: *Detect Dark Stars with the Roman Space Telescope*
	International Workshop on the Identification of Dark Matter, Italy
	Title: *Tracing Cosmic Evolution through Dark Matter Phenomena*
May 2024	**First Stars VII, Flatiron Institute, NY**
	Title: *How do Primordial Black Holes change the Structure Formation?*
Apr. 2024	**Physics Seminar (Invited), Colgate University, Hamilton, NY**
	Title: *My Journey through Dark Matter and Early Universe*
Dec. 2023	**Texas Symposium on Relativistic Astrophysics**
	Tsung-Dao Li Institute, SJTU, Shanghai, China
	Title: *Imprints of the Primordial Black Holes over Cosmic History*
Apr. 2022	**APS April Meeting, New York City, NY**
	Title: *Detection of Super Massive Dark Stars by the Roman Space Telescope*
Jun. 2019	**Symposium in Honor of the Legacy of Vera Rubin**
	Georgetown University, Washington DC
	Title: *Multi-scatter Capture of Superheavy Dark Matter by Pop.III Stars*
Mar. 2019	**Rochester Symposium for Physics Students: SPS Regional Meeting**
	University of Rochester, Rochester, NY
	Title: *Multi-scatter Capture of Superheavy Dark Matter by the First Stars*
2018	**The International Society for Optics and Photonics(SPIE): SPIE OPTO**
	San Francisco, CA
	Title: *Multitwist Mobius polarization in crossed complex light beams*
Oct. 2016	**Keck Northeast Astronomy Consortium, Wesleyan University, CT**
	Title: *The Multi-Decade Optical Light Curve and Microvariability of Blazar OJ 287*

Teaching

UT Austin	**Department of Physics**
Spring 2024	Grading Assistant, *PHY 362K Quantum Mechanics II: Atoms/Molecules*
Fall 2023	Grading Assistant, *PHY 373 Quantum Mechanics I: Foundations*
2020-2024	Lab TA, *PHY 105M, PHY 105N, PHY 102N Labs for Physics II*
Spring 2022	Grading Assistant, *PHY 352L Classical Electrodynamics II*
Colgate Univ	**Department of Mathematics**
Spring 2019	Math Tutor, *MATH 311 Partial Differential Equation*
	Department of Physics and Astronomy
Fall 2018	Physics Tutor, *ASTR 210 Intermediate Astronomy and Astrophysics*
Fall 2016	Physics Tutor, *PHYS 131 Atoms and Waves*

Award & Fellowship

Univ of Texas Austin

2024 **Robert S. Davis and Lyell P. Davis Scholarship Fund**
For student participating in professional development activities

2024 **Graduate School Professional Development Award**
For student presenting original research on major conferences

APS

2022 **APS DAP Student/Postdoc Travel Grant**
For distinguished presenters who need reimbursement of travel costs

Colgate Univ

2019 **Joseph C. Amato & Anthony F. Aveni Award**
For showing excellence in scientific research

2016-2019 **Dean's Award with Excellence**
For Academic Excellence

2016 **Edwin Foster Kingsbury Prize**
For distinguished academic achievement

2016 **Sisson Mathematics Prizes**
For distinguished academic achievement

Selected Publications

2024 **Zhang, S.**, Bromm, V., & Liu. B. *How do Primordial Black Holes change the Halo Mass Function and Structure*, The Astrophysical Journal 975.1 (2024): 139, [arXiv:2405.11381].

Zhang, S., Ilie, C., & Freese, K. *Detectability of Supermassive Dark Stars with the Roman Space Telescope*, The Astrophysical Journal 965.2 (2024): 121, [arXiv:2306.11606].

2023 **Zhang, S.**, Liu, B., & Bromm, V. 2023. *Distinguishing the impact and signature of black holes from different origins in early cosmic history*, MNRAS, 528, 180., [arXiv: 2310.01763].

2022 Liu, B., **Zhang, S.**, & Bromm, V. 2022, *Effects of stellar-mass primordial black holes on first star formation*, MNRAS, 514, 2376., [arXiv:2204.06330]

2021 Ilie, C., Levy, C., Pilawa, J., & **Zhang, S.** *Constraining dark matter properties with the first generation of stars*, Phys. Rev. D, 104,123031., [arXiv: 2009.11474]

2020 Ilie, C., Pilawa, J., & **Zhang, S.** *Comment on "Multiscatter stellar capture of dark matter"*, Phys. Rev. D, 102, 048301. [arXiv:2005.05946]

Ilie, C., Pilawa, J., & **Zhang, S.** *Probing below the neutrino floor with the first generation of stars*, ArXiv Prerpint. [arXiv:2009.11478]

2019 Ilie, Cosmin, and **Saiyang Zhang**. *Multiscatter capture of superheavy dark matter by Pop III stars*, Journal of Cosmology and Astroparticle Physics 2019. 12 (2019): 051, [arXiv:1908.02700].

Weaver, Zachary R., ..., **Saiyang Zhang**, ..., et al. *The 2016 June Optical and Gamma-Ray Outburst and Optical Microvariability of the Blazar 3C 454.3*, The Astrophysical Journal 875.1 (2019): 15, [arXiv:1903.04587].

2017 Galvez, Enrique J., Ishir Dutta, and **Saiyang Zhang**. *Möbius Polarization of Non-Collinear Poincare Superpositions*, Latin America Optics and Photonics Conference. Optical Society of America, 2018.

2016 Balonek, Thomas J., ..., **Saiyang Zhang**, ..., et al. *The Optical Variability of the Blazar 3C 454.3 over Three Decades from the Colgate University Foggy Bottom Observatory*, American Astronomical Society Meeting Abstracts# 229. Vol. 229. 2017.

Balonek, Thomas J., **Saiyang Zhang**, et al. *Blazar CTA 102 Reaches Historic Optical Maximum During Current Extended Period of Activity*, The Astronomer's Telegram 9732 (2016).

Chapman, Katie J., ..., **Saiyang Zhang**, ... et al. *A Spectacular, Unprecedented Optical Flare in the Blazar CTA 102*, The Astronomer's Telegram 9756 (2016).