

# Ananda F. Smith

Ph.D. Student, MIT Center for Theoretical Physics ◇ afs03@mit.edu

## EDUCATION

<b>Massachusetts Institute of Technology</b>	2025 – Present
Ph.D. in Physics	
<b>Case Western Reserve University (CWRU)</b>	2021 – 2025
B.S. Mathematics and Physics with Astronomy secondary major <i>Summa cum laude</i>	

## RESEARCH EXPERIENCE

<b>Cosmic Topology</b> , Undergraduate Researcher	Sep 2024 – May 2025
<i>Supervised by Craig Copi &amp; Glenn Starkman</i>	
Computed cosmic microwave background temperature and polarization correlations induced by primordial gravitational waves in universes with non-orientable spatial topologies.	
<b>Magnetized Shocks from Neutron Star Mergers</b> , Caltech WAVE Fellow	Jun 2024 – Aug 2024
<i>Supervised by Elias Most</i>	
Modeled shock from collapsing magnetar propagating through ejecta by performing relativistic magnetohydrodynamic simulations in <i>AthenaK</i> framework.	
<b>Spatially Anisotropic Cosmologies</b> , Undergraduate Researcher	May 2023 – Sep 2024
<i>Supervised by Craig Copi &amp; Glenn Starkman</i>	
Derived fluctuations in cosmic microwave background temperature in spacetimes with anisotropic Thurston geometries. Strongly constrained curvature parameter $ \Omega_K  \lesssim 10^{-5}$ in all five of these spacetimes.	

## PUBLICATIONS

<b>A. F. Smith</b> , C. J. Copi, G. D. Starkman. <i>Cosmological constraints on anisotropic Thurston geometries</i> . <i>JCAP</i> <b>01</b> (2025) 005 [ <a href="https://arxiv.org/abs/2409.03008">arXiv:2409.03008</a> ].	
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## TALKS

<b>CWRU Physics Department Senior Symposium</b> , Cleveland, OH	Apr 2025
“Gravitational waves in non-orientable universes.”	
<b>CERCA Seminar</b> , Cleveland, OH	Oct 2024
“Cosmological constraints on anisotropic Thurston geometries.”	
<b>Caltech SFP Summer Seminar Day</b> , Pasadena, CA	Aug 2024
“Numerical Modeling of Shock-Powered Transients from Neutron Star Mergers.”	
<b>Penn State Neighborhood Workshop on Astrophysics and Cosmology</b> , State College, PA	Apr 2024
“Constraining Cosmic Anisotropic Curvature.”	

## POSTERS

<b>APS Global Physics Summit</b> , Anaheim, CA	Mar 2025
“Cosmological constraints on anisotropic Thurston geometries.”	
<b>Intersections Research Symposium</b> , Cleveland, OH	Dec 2024
“Cosmological constraints on anisotropic Thurston geometries.”	
<b>SpaceVision Research Symposium</b> , Washington, DC	Nov 2023
“Constraining Curvature in Kantowski-Sachs Spacetimes.”	
<b>APS Eastern Great Lakes Section Meeting</b> , Cleveland, OH	Oct 2023
“Constraining Curvature in Kantowski-Sachs Spacetimes.”	

## HONORS & AWARDS

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<b>Polykarp Kusch Prize</b> for best physics senior thesis CWRU Department of Physics	2025
<b>Jason J. Nassau Prize</b> to outstanding seniors in astronomy CWRU Department of Astronomy	2025
<b>Intersections Research Symposium Award</b> , 1st place in Physical Sciences category CWRU Undergraduate Research Office	2024
<b>Donald A. Glaser Award</b> to outstanding mathematics and physics students CWRU Department of Physics	2024
<b>Richard L. Garwin Award</b> for service and scholarship in physics CWRU Department of Physics	2024
<b>Sigma Pi Sigma Recognition</b> CWRU Sigma Pi Sigma Chapter	2023
<b>Junior/Senior Scholarship</b> Case Alumni Association	2023
<b>Deans High Honors</b> CWRU Office for Undergraduate Studies	2021–2025

## LEADERSHIP & SERVICE

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<b>Physics Department Undergraduate Program Committee</b> <i>B.S. Math and Physics Student Representative</i> Advised undergraduate program requirements and course offerings.	Oct 2023 – May 2025
<b>Society of Physics Students (SPS)</b> <i>Vice President, Treasurer</i> Reinitiated SPS and instated Sigma Pi Sigma Honor Society CWRU chapters. Awarded 2022-23 Notable Chapter and 2023-24 Outstanding Chapter by SPS National.	Apr 2023 – Dec 2024
<b>Students for the Exploration and Development of Space</b> <i>Treasurer, Secretary</i> Promoted professional development and facilitated networking opportunities by hosting speakers from NASA Glenn Research Center and local start ups. Organized club transportation and raised funds for annual <a href="#">SpaceVision</a> conference.	Nov 2021 – May 2024
<b>Women in Physics and Astronomy Club</b> <i>Secretary</i> Organized and conducted monthly Q&A sessions with Physics Department colloquium and seminar speakers. Re-started, managed, and created promotional graphics for club social media.	Feb 2022 – Apr 2023