

# Michael-Henry C. Wentzel

PH.D. PRECANDIDATE IN THEORETICAL HIGH ENERGY PHYSICS

NATIONAL SCIENCE FOUNDATION GRADUATE RESEARCH FELLOW

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## Education

### University of Illinois

Urbana-Champaign, IL

PH.D. CANDIDATE IN THEORETICAL HIGH ENERGY PHYSICS

Aug. 2020 - Present

- GPA: 3.92/4.0
- Coursework: Advanced Field Theory (A), AdS/CFT Correspondence (A), Particle Physics (A), Condensed Matter Physics I (A), General Field Theory (A+), General Relativity II (A-)

### University of Michigan, College of LSA

Ann Arbor, MI

B.S. IN PHYSICS AND MATHEMATICAL PHYSICS

Sept. 2016 - April 2020

- GPA: 3.95/4.0      GPA Physics: 4.0/4.0      GPA Mathematics: 3.95/4.0
- Honors: Leon P. Zukowski Award, William J. Bradstrom Freshman Prize, University Honors, James B. Angell Scholar, Honors Summer Fellowship

## Fellowships

### National Science Foundation Graduate Research Fellow

Urbana-Champaign, IL

UNIVERSITY OF ILLINOIS

Jun. 2022 - Jun. 2027

Description: 5 year fellowship with 3 years of funding towards the completion of a graduate degree

### Honors Summer Fellowship

Ann Arbor, MI

UNIVERSITY OF MICHIGAN

May 2019 - Jul. 2019

Description: 2 month fellowship with funding towards completion of an undergraduate honors thesis

## Research Experience

### Kahn Research Group, University of Illinois

Urbana-Champaign, IL

GRADUATE RESEARCH ASSISTANT

May 2021 - Present

Primary Research Focus: searches for axion dark matter and axion-like particles, searches for high-frequency gravitational waves, superconducting radio-frequency cavities as particle detectors

### Safdi Research Group, University of Michigan

Ann Arbor, MI

UNDERGRADUATE RESEARCH ASSISTANT

Dec. 2018 - Aug. 2020

Primary Research Focus: N-body simulations of axion dark matter in the early Universe, implications of structural formation on indirect dark matter detection

### Facility for Rare Isotope Beams (FRIB), Michigan State University

East Lansing, MI

UNDERGRADUATE RESEARCH ASSISTANT

Jun. 2018 - Jul. 2018

Primary Research Focus: modeling fields of quadrupole magnets in the beam lines of linear accelerators

### Deng Research Group, University of Michigan

Ann Arbor, MI

UNDERGRADUATE RESEARCH ASSISTANT

Oct. 2017 - Apr. 2018

Primary Research Focus: simulation of reflective intensity of monolayer materials, production of monolayer materials

## Teaching Experience

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### Department of Physics, University of Illinois

Urbana-Champaign, IL

GRADUATE TEACHING ASSISTANT

Aug. 2020 - Present

Description: taught Physics 213/214 (introductory quantum and thermal physics), Physics 212 (introductory electromagnetism), and Physics 211 (introductory classical mechanics); received student rating of “Outstanding” three consecutive terms

### Department of Mathematics, University of Michigan

Ann Arbor, MI

MICHIGAN MATH AND SCIENCE SCHOLARS COURSE INSTRUCTOR

Jun. - Jul. 2020; Jun. - Jul. 2021

Description: taught introductory gravitational physics for high school students, designed and taught a python overview

### Department of Mathematics, University of Michigan

Ann Arbor, MI

MATHEMATICS TUTOR

Sept. 2018 - April 2020

Description: tutored students in introductory and advanced mathematics courses

## Community Outreach

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### Guidance for Physics Students (GPS)

Urbana-Champaign, IL

GRADUATE STUDENT MENTOR

Sept. 2021 - Present

Description: mentor to two undergraduate mentees providing advice in research, academics, and graduate applications

### Honors Summer Fellowship, Museum of Natural History

Ann Arbor, MI

OUTREACH VOLUNTEER

Jul. 2019 - Aug. 2019

Description: design an administration of dark matter demonstrations

### Quora

Ann Arbor, MI

CONTRIBUTOR

Jul. 2017 - Jul. 2019

Description: answering ~ 70 physics questions with ~ 100K answer views

### Michigan State University, Henry Ford Museum

Detroit, MI

OUTREACH VOLUNTEER

Jul. 2018

Description: administering nuclear physics demonstrations

### Society of Physics Students (SPS)

Ann Arbor, MI

OUTREACH VOLUNTEER

Jan. 2018

Description: administering physics demonstrations at the Ann Arbor Hands-On Museum

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## Publications

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### Safdi Research Group

AUTHOR

April 2020

- Wentzel, Michael. “Computational Methods for Gravitational Simulations of Axion Minihalos.” *Senior Thesis, University of Michigan* (2020).

### Facility for Rare Isotope Beams

AUTHOR

October 2018

- Wentzel, Michael. “Simulation and Fitting of Magnetic Fields of Superconducting Multipole Magnets at FRIB.” *Student Journal of Physics: Volume 7* (2018).

## Deng Research Group

CO-AUTHOR

August 2019

- Horng, Jason, Eric W. Martin, Yu-Hsun Chou, Emmanuel Courtade, Tsu-chi Chang, Chu-Yuan Hsu, Michael-Henry Wentzel et al. "Perfect absorption by an atomically thin crystal." *Physical Review Applied* 10.1103/PhysRevApplied.14.024009 (2020).
- Martin, Eric W., Jason Horng, Hanna G. Ruth, Eunice Paik, Michael-Henry Wentzel, Hui Deng, and Steven T. Cundiff. "Encapsulation Narrows Excitonic Homogeneous Linewidth of Exfoliated MoSe<sub>2</sub> Monolayer." *arXiv preprint arXiv:1810.09834* (2018).
- Martin, Eric W., Jason Horng, Hanna G. Ruth, Eunice Paik, Michael-Henry Wentzel, Hui Deng, and Steven T. Cundiff. "Homogeneous Linewidth of Encapsulated MoSe<sub>2</sub> Monolayer Revealed using Multidimensional Coherent Spectroscopy." *2018 Conference on Lasers and Electro-Optics (CLEO)*, pp. 1-2. IEEE, 2018.

## Talks and Posters

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Nov. 2022	<b>Chicago Quantum Summit</b> , University of Chicago	Poster
Oct. 2022	<b>SQMS Annual Meeting</b> , Fermilab	Poster
Sept. 2022	<b>School on Table-Top Experiments for High Energy Physics</b> , Perimeter Institute	Poster
May 2022	<b>Illinois Pheno Symposium</b> , University of Chicago	Talk
May 2022	<b>PIKIMO 12</b> , Notre Dame University	Talk
April 2022	<b>IQUIST Young Researchers Seminar</b> , University of Illinois at Urbana-Champaign	Talk
July 2019	<b>Honors Summer Fellowship Poster Session</b> , University of Michigan	Poster
July 2018	<b>Michigan State University REU Poster Session</b> , Michigan State University	Poster
April 2018	<b>Undergraduate Research Opportunity Program Symposium</b> , University of Michigan	Poster