Michael-Henry C. **Wentzel**

Ph.D. Candidate in Theoretical High Energy Physics

National Science Foundation Graduate Research Fellow

Loomis Laboratory of Physics, 1110 W. Green Street, Urbana IL 61801, Office 447

1(810)404-2573 | wentzel4@illinois.edu | wentmich

Education

University of Illinois — *Urbana-Champaign, IL*

Ph.D. Candidate in Theoretical High Energy Physics — *Aug. 2020 - Present*

University of Michigan, College of LSA — *Ann Arbor, MI*

B.S. in Physics and Mathematical Physics with High Distinction and High Honors — *Sept. 2016 - April 2020*

Awards & Fellowships

National Science Foundation Graduate Research Fellow — *Urbana-Champaign, IL*

University of Illinois — *Jun. 2022 - Jun. 2027*

Five year fellowship with three years of funding towards the completion of a graduate degree

Leon P. Zukowski Prize — *Ann Arbor, MI*

University of Michigan — *May 2020*

Awarded for excellence in teaching

Honors Summer Fellowship — *Ann Arbor, MI*

University of Michigan — *May 2019 - Jul. 2019*

Two month fellowship with funding towards completion of an undergraduate honors thesis

William J. Branstrom Freshman Prize — *Ann Arbor, MI*

University of Michigan — *May 2017*

Awarded to top 5% of the freshman class

Research

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

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

Outreach

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

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 $MoSe_2$ 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 $MoSe_2$ Monolayer Revealed using Multidimensional Coherent Spectroscopy." *2018 Conference on Lasers and Electro-Optics (CLEO), pp. 1-2. IEEE*, 2018.

Talks and Posters

April 2023	**UIUC High Energy Pheno./Exp. Seminar**, University of Illinois at Urbana-Champaign	*Talk*
Nov. 2022	**Chicago Quantum Summit**, University of Chicago	*Poster*
Oct. 2022	**SQMS Annual Meeting**, Fermilab	*Poster*
Sept. 2022	**School on Table-Top Experiments for High Energy Physics**, Perimeter Institute	*Poster*
May 2022	**Illinois Pheno Symposium**, University of Chicago	*Talk*
May 2022	**PIKIMO 12**, Notre Dame University	*Talk*
April 2022	**IQUIST Young Researchers Seminar**, University of Illinois at Urbana-Champaign	*Talk*
July 2019	**Honors Summer Fellowship Poster Session**, University of Michigan	*Poster*
July 2018	**Michigan State University REU Poster Session**, Michigan State University	*Poster*
April 2018	**Undergraduate Research Opportunity Program Symposium**, University of Michigan	*Poster*