

# Zachary Nasipak

## Curriculum Vitae

University of North Carolina at Chapel Hill  
Department of Physics and Astronomy  
Phillips Hall CB3255  
Chapel Hill, NC 27599

✉ [znasipak@live.unc.edu](mailto:znasipak@live.unc.edu)  
[url: znasipak.web.unc.edu](http://znasipak.web.unc.edu)

## Education

### University of North Carolina at Chapel Hill

Ph.D., Physics

Expected Spring 2020

M.A., Physics

2017

*Project: The scalar self-force for generic extreme-mass-ratio orbits in a Kerr spacetime*

### Vassar College

B.A., Physics and Astronomy, Mathematics Minor

2015

*Thesis: Constraining maverick dark matter through direct detection experiments*

## Academic Internships

- **University of North Carolina at Chapel Hill** Summer 2015  
*Supervisor: Dr. Sheila J. Kannappan* Chapel Hill, NC
- **NASA Goddard Space Flight Center** Summer 2014  
*Supervisors: Dr. John Baker & Dr. Bernard Kelly* Greenbelt, MD
- **Vassar College Undergraduate Research Summer Institute** Summer 2013  
*Supervisors: Dr. Kimberly A. Riegel & Dr. David T. Bradley* Poughkeepsie, NY
- **Vassar Class of 1951 Observatory** Fall 2011  
*Supervisor: Dr. Fred Chromey* Poughkeepsie, NY

## Publications

- *Scalar self-force for generic bound orbits in the Kerr spacetime*  
[Z. Nasipak](#), T. Osburn, C. R. Evans  
[In preparation](#)
- *The Baryonic Collapse Efficiency of Galaxy Groups in the RESOLVE and ECO Surveys*  
K. D. Eckert, S. J. Kannappan, C. del P. Lagos, A. D. Baker, A. A. Berlind, D. V. Stark, A. J. Moffett [Z. Nasipak](#), M. A. Norris  
[Astrophys. J](#), 849, 1 (2017), [arXiv:1709.07462](#)
- *Effect of measurement conditions on sound scattered from a pyramid diffuser in a free field*  
K. A. Riegel, D. T. Bradley, M. Morgan, [Z. Nasipak](#), I. Kowalok  
[Proc. Mtgs. Acoust](#), 22, 015003 (2016)
- *Numerical prediction of sound scattering from surfaces with fractal geometry: A preliminary investigation*  
D. Bradley, E. O. Snow, K. A. Riegel, [Z. D. Nasipak](#), and A. S. Terenzi  
[Proc. Mtgs. Acoust](#), 12, 015010 (2014)

## Presentations

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- **20th Capra Meeting on Radiation Reaction** June 2017  
*Scalar self-force for generic, bound orbits on Kerr* Chapel Hill, NC
- **American Physical Society April Meeting** Jan 2017  
*Scalar self-force for generic bound orbits on Kerr* Washington, D.C.
- **NASA Goddard Intern Poster Session** July 2014  
*Analyzing and Visualizing Black Hole Binary Simulations* Greenbelt, MD
- **Vassar Undergraduate Research Summer Institute Symposium** Sept 2013  
*Measuring the Directional Sound Distribution of Diffusers* Poughkeepsie, NY

## Teaching & Mentoring

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### Department of Physics and Astronomy, UNC at Chapel Hill

- Teaching Assistant Spring 2017  
*PHYS 724: Graduate Statistical Mechanics*
- Mentoring high school student 2017-18  
*Helping mentor a high school student from the North Carolina School of Science and Mathematics for their research in black hole perturbation theory on time-domain self-force calculations*
- Senior Graduate Student Pre-Candidacy Mentoring Team 2016-17
- Teaching Assistant Fall 2015  
*PHYS 118: Introductory Physics: Mechanics & Special Relativity*

### Academic Support Program for Student Athletes, UNC at Chapel Hill

- Physics and Astronomy Tutor 2016-18

## Awards & Fellowships

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- **NC Space Grant Graduate Research Fellowship** 2017  
NASA/North Carolina Space Grant Consortium
- **Doctoral Merit Assistantship** 2016  
University of North Carolina at Chapel Hill
- **Shearin Fellowship** 2015  
Department of Physics and Astronomy, UNC at Chapel Hill
- **Lucy Kellogg English Prize** 2015  
Department of Physics and Astronomy, Vassar College
- **Robert Bradford Newman Student Award Recipient** 2013-14  
Newmand Fund
- **Tananbaum Fellowship** 2013-14  
Vassar College
- **Frances D. Fergusson Scholarship** 2012-15  
Vassar College

## Additional Experiences & Skills

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### Leadership Positions

- **President**, Physics & Astronomy Graduate Student Association 2017-18  
*Currently serving as the president of the Physics & Astronomy Graduate Student Association at the University of North Carolina at Chapel Hill. Responsibilities include mediating dialogue between the Department chair and graduate students, writing and managing the graduate student association budget, and organizing departmental events.*
- **Graduate Representative**, Physics & Astronomy Graduate Recruiting 2016-17  
*Served as a graduate representative for the Graduate Recruitment Committee for the Department of Physics & Astronomy at University of North Carolina at Chapel Hill. Responsibilities included organizing the departmental visitation weekend for accepted graduate applicants and attending external, recruitment events.*
- **Senior Graduate Student Pre-Candidacy Mentoring Team Leader** 2016-17  
*Co-led a group of 8 senior graduate students who helped first year graduate students prepare for their doctoral written exams. Responsibilities included organizing, scheduling, and leading problem review sessions.*

### Science Outreach

- **Volunteer**, North Carolina Astronomy Days Jan 2018
- **Volunteer**, Letters to a Pre-Scientist 2016-18

### Conference Organization

- **20th Capra Meeting on Radiation Reaction**, Chapel Hill, NC 2017  
*Member of the local organizing committee for the 20th Capra Meeting held in Chapel Hill. Helped design the conference website, book conference rooms and dining venues, organize presentation schedule, and provide on-site technical support.*

### Organizational Memberships

- American Physical Society
- Sigma Xi Honor Society
- Phi Beta Kappa Honor Society

### Computational Skills

- L<sup>A</sup>T<sub>E</sub>X, Python, Mathematica