

ALEX KINSELLA  
Ph.D. Candidate in Physics  
University of California, Santa Barbara  
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## Career Objective

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Seeking a postdoctoral position at the intersection of ocean physics, global climate, and biogeochemistry. Physics Ph.D. candidate, transitioning from string theory to physical oceanography, eager to apply extensive graduate level coursework in oceanography, climate and numerical modeling, and to expand my current research in ocean dynamics.

## Education

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- 2015-21    **UC Santa Barbara**  
Ph.D. Physics, June 2021 (expected)  
    *Advisor:* David R. Morrison  
    *Dissertation Title:* M-Theory/Heterotic Duality in the Half- $G_2$  Limit  
M.A. Physics, May 2018
- 2011-15    **Stanford University**  
B.S. Mathematics and Physics (with distinction and physics departmental honors)  
    *Honors Thesis Advisor:* Sean Hartnoll  
    *Honors Thesis Title:* No Negative Modes About the Axionic Wormhole Instanton

## Publications

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*Author ordering in high energy theoretical physics is alphabetical by last name*

- In prep.    B. Acharya, A. Kinsella, and D. Morrison. “Heterotic Duals of M-Theory on Joyce Orbifolds.” In preparation for *Journal of High Energy Physics*.
- Preprint    B. Acharya, A. Kinsella, and E. Eik Svanes. “ $T^3$ -Invariant Heterotic Hull-Strominger Solutions.” To be submitted to *Journal of High Energy Physics* within two weeks. arXiv preprint: [arxiv.org/abs/2010.07438](https://arxiv.org/abs/2010.07438)
- 2018        S. B. Giddings and A. Kinsella. “Gauge-invariant observables, gravitational dressings, and holography in AdS.” *Journal of High Energy Physics*. doi.org/10.1007/JHEP11(2018)074

## Grants, Fellowships, and Awards

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- 2020-21    UC Santa Barbara National Science Foundation Extension Fellowship (\$24,000)
- 2015-20    National Science Foundation Graduate Research Fellowship (\$102,000)
- 2015        Award for Excellence in Honors Thesis Presentation, Stanford Oral Communication Program (\$350)

- 2013 Stanford Vice Provost for Undergraduate Education Major Grant (\$6,000)
- 2012 Best Poster Presentation, Stanford Earth Science Undergraduate Research Program
- 2010 Manson Scholar, The Bay School of San Francisco  
*Awarded by the faculty and administration for intellectual merit, commitment to the school's values, and leadership in the school community. Included a full four-year college scholarship.*

### Selected Presentations

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- 2019 **Heterotic Duals of M-Theory on Joyce Orbifolds.** Talk at the Simons Collaboration Meeting on *Physics and Special Holonomy*, Kavli Institute for Theoretical Physics, April 2019
- 2017 **Diffeomorphism-Invariant Bulk Observables in AdS.** Talk at Pacific Coast Gravity Meeting, UC Santa Barbara, March 2017
- 2013 **Fully Coupled Models of (Idealized) Buildings and Seismic Waves from Earthquakes.** Poster at 2013 Southern California Earthquake Center Annual Meeting, Palm Springs, CA
- 2012 **Rapid Lateral Variation of Seismic Anisotropy in the Salton Trough, Southern California.** Poster at 2012 American Geophysical Union Fall Meeting, San Francisco, CA
- 2016-20 UCSB Internal Seminars  
*Physics of the Ocean and Climate*, May 2020  
*Seiberg-Witten Theory and 4-Manifolds*, February 2019  
*The Supersymmetric Proof of the Index Theorem*, May 2018  
*The Category of Topological B-Branes*, February 2018  
*BRST, Gauge Theory, and Cohomological Field Theory*, January 2018  
*The Kodaira Embedding Theorem*, November 2017  
*Mirror Symmetry for  $G_2$  Manifolds from Dual Tops*, November 2017  
*D-Branes and Matrix Theory*, October 2017  
*The A- and B-Model Topological Field Theories*, May 2017  
*The Virasoro Algebra*, January 2017  
*Lattice Gauge Theories*, October 2016

### Teaching and Mentorship Experience

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- 2019-20 **Teaching assistant**, UC Santa Barbara Physics Department  
 Physics 219: Statistical Mechanics (Winter 2020)  
 Physics 210A: Electricity and Magnetism (Winter 2020)  
 Physics 101: Complex Analysis (Spring 2019)
- 2015 **Residential counselor**, Stanford Pre-Collegiate Studies  
*Ten week program in which I tutored high school students in special relativity, quantum mechanics, and number theory*
- 2014-15 **Tutor**, Stanford University Mathematics Organization  
*Linear algebra, multivariable calculus, and differential equations*
- 2013 **Counselor**, Women in Physics Program, Stanford Society of Physics Students  
*Events for freshman women interested in physics and physics demonstrations for local Girl Scouts*

## Service

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2017-18 Co-Organizer of the UC Santa Barbara Mathematical Physics Seminar

## Skills

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Extensive graduate-level coursework in oceanography, physics, and mathematics  
*Relevant graduate-level coursework for oceanography: physical oceanography, chemical oceanography, geological oceanography, biogeochemistry, climate modeling, fluid mechanics, computational fluid dynamics, numerical methods, seismology*

Experience with ROMS, NAM, ocean circulation inverse models, and data analysis via spectral methods and mode decompositions

Proficiency in Matlab, Mathematica, Python. Experience with Java.

Experience with numerical solution of differential equations

## Memberships

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2017-21 Simons Collaboration for Special Holonomy in Geometry, Analysis, and Physics

Association for the Sciences of Limnology and Oceanography (ASLO)

American Physical Society (APS)

American Geophysical Union (AGU)

## Broader Interests and Activities

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Birdwatching

*Member of National Audubon Society and Santa Barbara Audubon Society*

Men's artistic gymnastics

*Member of UC Santa Barbara Gymnastics Club and National Intercollegiate Association of Gymnastics Clubs*

Backpacking and hiking

*Completed Wilderness First Responder certification and a 23-day outdoor leadership course*