

# EMILY M. NARDONI

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CONTACT	emilynardoni@gmail.com	
RESEARCH INTERESTS	Theoretical particle physics, especially the study of non-perturbative properties of Quantum Field Theory using symmetry principles and string theory.	
EMPLOYMENT	ASSISTANT PROFESSOR Physics and Astronomy Department Vassar College, Poughkeepsie, NY	Aug. 2024-
	KAVLI FELLOW & POSTDOCTORAL SCHOLAR Kavli Institute for the Physics and Mathematics of the Universe University of Tokyo, Japan	Oct. 2021 - Jul. 2024
	POSTDOCTORAL SCHOLAR Mani L. Bhaumik Institute for Theoretical Physics University of California, Los Angeles, CA	Sep. 2018 - Sep. 2021
EDUCATION	PH.D. IN PHYSICS, UNIVERSITY OF CALIFORNIA, SAN DIEGO Dissertation: <i>Aspects of Supersymmetric Conformal Field Theories in Various Dimensions</i> Advisor: Kenneth Intriligator	Sep. 2018
	B.S. IN PHYSICS, MASSACHUSETTS INSTITUTE OF TECHNOLOGY Research Advisors: Peter Fisher, Iain Stewart	Jun. 2013
HONORS & AWARDS	<i>Simons Foundation Grant Recipient</i> Funds awarded by SFI to lead a Working Group at the Aspen Center for Physics.	Aug. 2023
	<i>Kavli Fellowship</i> , Kavli IPMU at the University of Tokyo	2021-
	<i>University of California President's Dissertation Year Fellowship</i> Awarded by the UC Office of the President.	2017 - 2018
	<i>Barbara &amp; Paul Saltman Excellent Teaching Award for Graduate Students</i> Awarded by the UCSD Academic Senate.	2018
	<i>Achievement Rewards for College Scientists</i> Awarded by the ARCS Foundation.	2014 - 2018
	<i>Strings 2018 Fellowship</i> Funds awarded to speak and present a poster in Okinawa, Japan.	Jun. 2018
	<i>Physics Chair's Challenge Winner</i> Funds awarded by UCSD for research-related travel.	Jun. 2016
	<i>Selected Paul E. Gray UROP Researcher</i> , MIT	Apr. 2011

**RESEARCH  
PUBLICATIONS**

16. *Dimensionally Reducing Generalized Symmetries from (3+1)-Dimensions*  
**E. Nardoni**, M. Sacchi, O. Sela, G. Zafrir & Y. Zheng, arXiv:2403.15995, under review at JHEP.
15. *Dualities of Adjoint SQCD and Supersymmetry Enhancement*  
K. Maruyoshi, **E. Nardoni** & J. Song, JHEP 09 (2023) 082, arXiv:2306.08867.
14. *Symmetry TFTs and Anomalies of Non-Invertible Symmetries*  
J. Kaidi, **E. Nardoni**, G. Zafrir & Y. Zheng, JHEP 10 (2023) 053, arXiv:2301.07112.
13. *Exploring the Strong-Coupling Region of  $SU(N)$  Seiberg-Witten Theory*  
E. D'Hoker, T. Dumitrescu & **E. Nardoni**, JHEP 11 (2022) 102, arXiv:2208.11502.
12. *Aspects of Irregular Punctures via Holography*  
I. Bah, F. Bonetti, R. Minasian, **E. Nardoni** & T. Waddleton, JHEP 11 (2022) 131, arXiv:2207.10094.
11. *M5-brane Sources, Holography, and Argyres-Douglas Theories*  
I. Bah, F. Bonetti, R. Minasian & **E. Nardoni**, JHEP 11 (2021) 140, arXiv:2106.01322.
10. *Holographic Duals of Argyres-Douglas Theories*  
I. Bah, F. Bonetti, R. Minasian & **E. Nardoni**, Phys.Rev.Lett. 127 (2021) no.21, 211601, arXiv:2105.11567.
9. *Revisiting the Multi-Monopole Point of  $SU(N)$   $\mathcal{N} = 2$  Gauge Theory in Four Dimensions*  
E. D'Hoker, T. Dumitrescu, E. Gerchkovitz & **E. Nardoni**, JHEP 09 (2021) 003, arXiv:2012.11843.
8. *Renormalization Group Improvement of the Effective Potential: an EFT Approach*  
A. Manohar & **E. Nardoni**, JHEP 04 (2021) 093, arXiv:2010.15806.
7. *Anomalies of QFTs from M-theory and Holography*  
I. Bah, F. Bonetti, R. Minasian & **E. Nardoni**, JHEP 2001 (2020) 125, arXiv:1910.04166.
6. *Anomaly Inflow for M5-branes on Punctured Riemann Surfaces*  
I. Bah, F. Bonetti, R. Minasian & **E. Nardoni**, JHEP 1906 (2019) 123, arXiv:1904.07250.
5. *Class S Anomalies from M-theory Inflow*  
I. Bah, F. Bonetti, R. Minasian & **E. Nardoni**, Phys.Rev.D 99 (2019) no.8, 086020, arXiv:1812.04016.
4. *Landscape of Simple Superconformal Field Theories in 4d*  
K. Maruyoshi, **E. Nardoni** & J. Song, Phys.Rev.Lett. 122 (2019) no.12, 121601, arXiv:1806.08353.
3. *Structure of Anomalies of 4d SCFTs from M5-branes, and Anomaly Inflow*  
I. Bah & **E. Nardoni**, JHEP 1903 (2019) 024, arXiv:1803.00136.

2. *4d SCFTs from Negative-Degree Line Bundles*  
**E. Nardoni**, JHEP 1808 (2018) 199, arXiv:1611.01229.

1. *Deformations of  $W_{A,D,E}$  SCFTs*  
K. Intriligator & **E. Nardoni**, JHEP 1609 (2016) 043, arXiv:1604.04294.

\*Author listings follow the standard high-energy theory convention of alphabetical ordering.

**IN PREPARATION** *Cascading from  $\mathcal{N} = 2$  to Confinement and Chiral Symmetry Breaking in Adjoint QCD*  
E. D'Hoker, T. Dumitrescu & **E. Nardoni**, draft in preparation.

*Mack Demystified: A CFT Review*  
A. Manohar, **E. Nardoni** & S. Pal, review article in preparation.

<b>INVITED COLLOQUIA</b>	McGill University, Department of Physics Colloquium	Oct. 2022
<b>CONFERENCES &amp; WORKSHOPS</b>	<i>Paths to Quantum Field Theory 2024 (Invited Speaker)</i> Conference, Sarajevo, Bosnia and Herzegovina.	Jul. 2024
	<i>Strings and Geometry (Invited Speaker)</i> Conference, Hamburg University / DESY, Germany.	May 2024
	<i>Towards Realistic Physics at Large Quantum Number (Invited Speaker)</i> Workshop, Kavli IPMU, Japan.	May 2024
	<i>Aspects of Quantum Field Theory (Invited Speaker)</i> Workshop, KAIST, Korea.	Apr. 2024
	<i>Envisaging Future Trajectories in Effective Field Theory (Invited Speaker)</i> Conference, Kavli IPMU, Japan.	Mar. 2024
	<i>Global Categorical Symmetries (Invited)</i> Annual Collaboration Meeting, New York.	Nov. 2023
	<i>Recent Trends in Supersymmetric Field Theories (Invited Speaker)</i> Workshop, Jeju Island, Korea.	Oct. 2023
	<i>Defects, Strings and Fields 2023 (Invited Speaker)</i> Workshop, Jeju Island, Korea.	Sep. 2023
	<i>Hidden Holographic Structures in Symmetry Broken Phases (Group Leader)</i> Working Group, Aspen Center for Physics.	Aug. 2023
	<i>SUSY 2023 (Invited Plenary Speaker)</i> Conference, University of Southampton.	Jul. 2023
	<i>SUSY-50 (Invited Speaker)</i> Conference, William I. Fine Theoretical Physics Institute, Minnesota.	May 2023
	<i>Quark Confinement 2023 (Invited Speaker)</i> Workshop, William I. Fine Theoretical Physics Institute, Minnesota.	May 2023

<i>QFT and Related Mathematical Aspects</i> ( <b>Invited Speaker</b> ) Workshop, Shuzenji Sogo Kaikan, Osaka Central Advanced Mathematical Institute.	Mar. 2023
<i>Geometry and Automorphicity of Supersymmetric Partitions</i> ( <b>Organizer</b> ) Workshop, Kavli IPMU.	Feb. 2023
<i>Global Categorical Symmetries</i> ( <b>Invited</b> ) Annual Collaboration Meeting, New York.	Nov. 2022
<i>Geometry of (S)QFT</i> ( <b>Invited Speaker &amp; Key Participant</b> ) Workshop, Simons Center for Geometry and Physics, Stony Brook.	Oct. 2022
<i>Strings 2022, Vienna</i> ( <b>Invited Speaker</b> ) • Recording: <a href="https://indico.cern.ch/event/1085701/contributions/4940894/">https://indico.cern.ch/event/1085701/contributions/4940894/</a>	Jul. 2022
<i>Global Categorical Symmetries</i> ( <b>Invited Speaker</b> ) Workshop, Perimeter Institute.	Jun. 2022
<i>Geometry, Representation Theory &amp; Quantum Fields</i> ( <b>Invited Speaker</b> ; virtual) Workshop, Osaka City University.	Mar. 2022
<i>Geometrization of (S)QFTs in <math>D \leq 6</math></i> ( <b>Invited Speaker &amp; Key Participant</b> ) Conference, Aspen Center for Physics.	Feb. 2022
<i>Geometric Correspondences of Gauge Theories</i> ( <b>Invited Speaker</b> ; virtual) Workshop, SISSA, Trieste.	Sep. 2021
<i>Southwest Strings Meeting 2021</i> ( <b>Invited Speaker</b> ; virtual)	Mar. 2021
<i>Superconformal Field Theories and Geometry</i> Workshop, Aspen Center for Physics.	Aug. 2018
<i>Recent Developments in Noncommutative Algebra</i> ( <b>Invited Speaker</b> ) Conference, University of Washington.	Mar. 2018
<i>Southern California Graduate Strings Meeting</i> ( <b>Organizer</b> ) Conference, University of California, San Diego.	May 2017
<i>The Role of Topology in Physics</i> Workshop, Simons Center for Geometry and Physics, Stony Brook.	Jul. 2016
<i>Southern California Graduate Strings Meeting</i> ( <b>Invited Speaker</b> ) Conference, Caltech.	May 2016
<i>American Physical Society April Meeting</i> (Speaker)	Apr. 2016
<i>Jets and Quantum Fields for LHC and Future Colliders</i> Workshop, Erwin Schrodinger International Institute for Mathematical Physics, Vienna.	Jul. 2013
<b>INVITED SEMINARS</b> Yukawa Institute for Theoretical Physics, Kyoto University, Seminar	May 2024
Asia Pacific Center for Theoretical Physics, Pohang, Seminar	Apr. 2024

Imperial College London, Quiver Meetings (virtual)	Dec. 2023
Osaka University, Particle Theory Group Seminar	Oct. 2023
University of California, Los Angeles, String Theory Seminar	May 2023
University of Chicago, Particle Theory Seminar	Apr. 2023
Korea Institute for Advanced Study, Strings Seminar	Feb. 2023
Symmetry Seminar, international online seminar series (virtual)	Feb. 2023
University of California, San Diego, Particle Theory Seminar	Feb. 2023
Simons Center for Geometry and Physics, Stony Brook, Seminar	Mar. 2022
CERN, String Theory Seminar (virtual)	Jan. 2022
King's College London, Theoretical Physics Seminar (virtual)	Dec. 2021
University of Tokyo, Hongo Campus, Particle Physics Seminar (virtual)	Nov. 2021
Massachusetts Institute of Technology, String/Gravity Seminar (virtual)	Apr. 2021
Harvard University, CMSA Seminar (virtual)	Mar. 2021
• <i>Recording:</i> <a href="https://www.youtube.com/watch?v=CRlsuQKnGLk">https://www.youtube.com/watch?v=CRlsuQKnGLk</a>	
All Things EFT international online seminar series (virtual)	Mar. 2021
• <i>Recording:</i> <a href="https://www.youtube.com/watch?v=h89BtQl06fg">https://www.youtube.com/watch?v=h89BtQl06fg</a>	
University of Pennsylvania, Theory Seminar (virtual)	Mar. 2021
Kavli IPMU, String/Math Seminar (virtual)	Mar. 2021
University of Chicago, Particle Theory Seminar (virtual)	Nov. 2020
QFT and Geometry international online seminar series (virtual)	Nov. 2020
• <i>Recording:</i> <a href="https://sites.google.com/view/qftandgeometryseminars/">https://sites.google.com/view/qftandgeometryseminars/</a>	
University of California, San Diego, Particle Theory Seminar (virtual)	Nov. 2020
SLAC National Accelerator Laboratory, Theory Seminar (virtual)	Apr. 2020
Caltech, High Energy Theory Seminar	Mar. 2019
University of Texas at Austin, Theory Group Seminar	Jan. 2019
Seoul National University, Theory Seminar	Sep. 2018
University of California, Los Angeles, String Theory Seminar	Nov. 2017
Johns Hopkins University, Theoretical Particle Physics Seminar	Feb. 2017
University of Washington, Algebra Seminar	Oct. 2016

## TEACHING EXPERIENCE

### INSTRUCTOR OF RECORD AT UCSD

Summer 2017

Course: Modern Physics (Physics 2D)

- Developed the syllabus, tests and homeworks, and gave all lectures.
- Supervised a graduate teaching assistant.
- 85.7% of students indicated on evaluations that they recommend me as an instructor.
- Citation from Excellent Teaching Award report, on student evaluations:  
“The response to the statement “I learned a great deal in this course” resulted in a higher score than all but one of the 25 Senate-faculty instances over the last decade.”

*Developed supplementary videos for Physics 2D*

Winter 2016

- Selected to create 20 problem-solving videos using Learning Glass technology.
- Chose, developed, and executed all problems for production, and prepared supplementary solution sets.
- Videos available at: <https://iti.ucsd.edu/PHYS2/PHYS2D/index.html>.

### TEACHING ASSISTANT AT UCSD

- For each applicable course, between 87.3% and 100% of students indicated on student evaluations that they recommend me as a teaching assistant.

Course: Modern Physics (Physics 2D)

Spring 2017

Course: Waves, Optics & Special Relativity (Physics 4D)

Winter 2017

Course: Graduate Classical Mechanics I (Physics 200A)

Fall 2015

Course: Advanced Classical Mechanics (Physics 110A)

Fall 2015

Course: Waves, Optics & Special Relativity (Physics 4D)

Winter 2015

Course: Mechanics & Electrostatics Lab (Physics 2BL)

Spring 2014

Course: Classical Mechanics (Physics 1A)

Winter 2014

Course: Classical Mechanics Lab (Physics 1AL)

Fall 2013

## OUTREACH

*The World of Mathematical Sciences, Conference at IPMU*

Aug. 2023

- Presentation at conference for female students and researchers in Japan.

*Aspen Science Center's Jane and Bill Frazer Physics Cafe*

Feb. 2022

- Public presentation and interview to increase public awareness and understanding of science, hosted by Aspen Center for Physics.

### VOLUNTEER PRESENTATIONS

- Gave talks to students about my path to becoming a physicist.
- Interacted with students and explained my research at their level of understanding.

Presentation Title: *My Path to Physics*

Jan. 2021

St. Christopher Parish School, West Covina, CA

Presentation Title: *On the Road to Science*

Feb. 2017

Northbrook Junior High, Northbrook, IL

Presentation Title: *Perspectives on Particle Physics*

Nov. 2015

Del Norte High School, San Diego, CA

Presentation Title: *Modern Particle Physics*

Oct. 2014

Young Physicists Program, University of California, San Diego, CA

Presentation Title: *Asking and Answering the Big Questions*

Sep. 2014

Providence High School, Burbank, CA

Presentation Title: *Why Study Physics?* Sep. 2014  
Holy Trinity Elementary School, Los Angeles, CA

Presentation Title: *Black Holes for 8th Graders* Dec. 2013  
St. Robert Bellarmine Elementary School, Burbank, CA

**PROFESSIONAL  
ACTIVITIES  
& COMMUNITY**

Founder & Organizer, *IPMU Noninvertible Symmetries Journal Club* 2022 - 2023

Journal Referee (Invited) 2022-  
• SciPost, Physical Review D, JHEP

Organizer, *Kavli IPMU String Theory Seminar* 2022 - 2023

Organizer, *Kavli IPMU Women's Lunch* 2021 - 2023

Organizer, *UCLA Theoretical Elementary Particle Physics Seminar* 2020 - 2021

Participant, *UCLA DiversiTea Journal Club on Diversity, Equity, and Inclusion* 2020

Organizer, *UCSD High Energy Physics Journal Club* 2017 - 2018

Representative, *UCSD Physics 1 & 2 Series Task Force* 2017 - 2018  
• Prepared recommendations to the Physics Department for restructuring the Physics 1 and 2 Series undergraduate courses.

Co-chair (Elected Position), *UCSD Physics Graduate Council* 2014 - 2018  
• Organized regular meetings with the Physics administration, and organized department-wide social activities.

Organizer, *Mentoring Women in Physics*, UCSD 2018  
• Organized a department-wide mentoring program which paired graduate women with undergraduate women in Physics, and planned mentoring activities.

Representative, *UCSD Education Policy Committee* 2015 - 2016  
• Served on faculty committee as student representative.  
• Prepared recommendations for restructuring the Physics graduate qualifying exam, which were subsequently implemented by the department.

Representative, *UCSD Outreach and Diversity Committee* 2014 - 2015  
• Served on faculty committee as student representative.

Representative (Elected Position), *UCSD Graduate Student Association* 2014 - 2015

**SUMMER  
SCHOOLS**

*QFT and Geometry Summer School (Invited Panelist; virtual)* Jul. 2020  
• Presented regarding new advances in geometric engineering.

*Theoretical Advanced Study Institute (TASI)* Jun. 2015  
• Attended theoretical physics summer school on "New Frontiers in Fields and Strings" at CU Boulder.

- Attended theoretical physics summer school on string theory at the Institute of Advanced Study, Princeton.