

# Ann-Marie Madigan

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## Research Interests

My research focuses on the gravitational dynamics of individually small, but collectively massive, groups of bodies. It spans both astrophysical and planetary sciences and includes the dynamics of stars and gas around supermassive black holes, the collective gravity of minor planets in the outer solar system and the dynamics of galactic dark matter.

## Employment

2016 - present      Assistant Professor & JILA Fellow, CU Boulder  
2012 - 2016      NASA Einstein & Theoretical Astrophysics Center (TAC) Postdoctoral Fellow,  
UC Berkeley

## Education

2012      *Ph.D., Astronomy*  
Leiden University, The Netherlands  
2007      *M.Sc., Astronomy*  
Leiden University, The Netherlands  
2004      *B.Sc., Honors Physics & Astronomy*  
National University of Ireland, Galway

## Awards & Grants

2021      *American Astronomical Society (AAS) Vera Rubin Early Career Prize*  
*Outstanding Faculty Mentor Award (CU Boulder)*  
*Increasing Diversity in STEM at CU Boulder, Packard Foundation*  
\$150k grant (co-PI)  
2018      *Packard Fellowship for Science and Engineering*  
\$875k grant (PI)  
2016      *NASA Astrophysics Theory Program*  
\$640k grant (PI)  
*NASA Solar System Workings*  
\$600k grant (PI)

2015 *NASA Pleiades*  
7 million CPU hr supercomputing grant (PI)

2014 *NSF XSEDE*  
2.5 million CPU hr supercomputing grant (co-PI)

2012 *NASA Einstein Postdoctoral Fellowship* (3 years)  
*TAC Postdoctoral Fellowship* (UC Berkeley, 1 year)

2010 *Martin & Beate Block Award*  
Promising young physicist, Aspen Center for Physics

2011 *NWO TopTalent Fellowship*  
Independent Ph.D. research grant, The Netherlands (4 years)

### **Invited Colloquia\* & Seminars**

2023 \*University of Wisconsin-Madison

2021 \*University of Edinburgh  
\*University of Washington  
\*Pontificia Universidad Católica de Chile

2020 \*Caltech  
\*University of Chicago

2019 \*Harvard University

2018 \*McGill University  
\*University of Michigan  
\*Michigan State University  
\*University of Kentucky  
\*University of Florida  
Theoretical Astrophysics Seminar, University of California, Berkeley  
University of Colorado Center for Astrobiology Seminar

2017 \*Pennsylvania State University  
Theoretical Astrophysics inc. Relativity & Cosmology (TAPIR) seminar, Caltech

2016 \*University of Amsterdam  
\*Leiden University  
\*Nijmegen University  
\*University of Arizona  
\*University of California, Berkeley  
\*University of Colorado, Boulder  
Canadian Institute for Theoretical Astrophysics (CITA)

2015 \*Institute for Astronomy, Hawaii  
\*University of California, Los Angeles

- 2014 IMPS seminar, UC Santa Cruz  
\*University of California, Davis
- 2013 Nova Galactic Center day, Amsterdam, The Netherlands
- 2012 \*University of California, Santa Cruz  
\*University of Birmingham, UK
- 2011 Swinburne University of Technology, Australia

### Invited Conference Talks

- 2022 AAS Division on Dynamical Astronomy, Center for Computational Astrophysics, New York
- 2018 “Open questions in Astrophysics”, Niels Bohr Institute, Denmark
- 2017 “Tidal Disruption Events: Piercing the Sphere of Influence”, Cambridge, UK
- 2016 “Fellows at the Frontiers”, Northwestern University  
“Dynamics & Accretion at the Galactic Center”, Aspen Center for Physics
- 2015 AAS Division on Dynamical Astronomy, Caltech
- 2014 “Stellar  $N$ -body Dynamics”, Italy
- 2013 “Black Hole Fingerprints”, Snowpac conference, Utah
- 2012 Marcel-Grossman Meeting on General Relativity, Sweden
- 2009 Astronomical Science Group of Ireland Conference

### Public Outreach

- 2021 Invited Talk for Cork Astronomy Club, Ireland (Nov. 2021)  
Outreach talk at Pretty Brains, non-profit organization for girls  
Outreach talk at Eagle-Rock High School, Los Angeles
- 2020 Panelist for “Women of JILA - Speaker Series”
- 2018 TEDx Boulder talk “*Black Hole Sun*”  
Keynote speaker for Denver Astronomical Society  
Invited talk for Students for the Exploration and Development of Space  
Astronomy liaison for the Logan School for Creative Learning (- present)
- 2017 Astronomy on Tap speaker, Boulder  
University of Colorado astronomy club speaker
- 2016 Invited public talk at SETI institute  
“*The bizarre orbits of minor planets beyond Neptune*”
- 2014 Invited talk for seminar series “*What Physicists Do*”, Sonoma State University

2013 *Dinner with a scientist* outreach event for Oakland school district

2011 Invited outreach talks:  
 Technical University Eindhoven, The Netherlands  
 De Leidsche Flesch, Leiden, The Netherlands  
*Careers in science*, St. Louis High School, Ireland

### CU Boulder Teaching

Fall 2022 ASTR-5720: Galaxies  
 Graduate course, 3 credits

Spring 2021, 2022 ASTR-2030: Black Holes  
 Undergraduate non-majors course, 3 credits

Fall 2020 ASTR-6000: Spiral Arm Formation and Dynamics  
 Graduate seminar, 1 credit

Spring 2018, 2019 ASTR-1030: Accelerated Introduction to Astronomy  
 Undergraduate majors course, 4 credits

Fall 2016, 2018 ASTR-5820: Origin & Evolution of Planetary Systems  
 Graduate course, 3 credits

Fall 2017, 2020 ASTR-3710: Formation & Dynamics of Planetary Systems  
 Undergraduate majors course, 3 credits

### Students and postdocs advised at CU Boulder

Graduate Students	Tatsuya Akiba	2020 - present
	Alexander Zderic	2017 - 2021
	Heather Wernke	2017 - 2021
Postdocs	Alexander Zderic	2022 - present
	Angela Collier	2019 - 2022
	Maria Tiongco	2019 - 2022
	Aleksey Generozov	2018 - 2021
Undergraduates	Selah McIntyre	2022 - present
	Alexandra Gladkova	2021 - 2022
	Karin Roley	2021 - 2022
	Allie Christensen	2020 - 2022
	Alexander Rodriguez	2019 - 2022
	Emma Lieb	2020 - 2021
	Gwendalynn Roebke	2018 - 2021
	Hayden Foote	2018 - 2020
	Jacob Moss	2018 - 2019
Jacob Fleisig	2017 - 2019	

Sean Moss  
Aidan Jared

2017 - 2018  
2017 - 2018

### **University Service at CU Boulder**

- 2022  
Chair of FDAP Faculty Search Committee  
Member of JILA executive committee  
Member of APS Friday Lunch Seminar committee  
Member of APS Exams committee
- 2021  
Member of College of Arts and Sciences Dean Search Advisory Committee  
Faculty representative to APS graduate student body  
Member of APS awards committee  
Reviewer of Undergraduate Research Opportunities Program (UROP)  
Co-organizer and host of JILA's Richard Nelson Thomas Award celebration
- 2020  
Member of APS Executive Committee  
Co-chair of Representation, Recruitment & Retention Department Action Team  
Panelist for Research and Innovation Office (RIO) Webinar
- 2019  
Member of Packard Fellowship internal competition review committee (- present)  
Member of graduate admissions committee
- 2018  
Member of faculty search committee for time-domain hire  
Chair of APS social committee  
Member of faculty search set-up committee  
Organizer of 'Women in Astro' lunches (- present)  
Organizer of 'Under-Represented Minorities in Astro' lunches (- present)
- 2017  
Honors Thesis Representative for the APS department (- present)  
Member of faculty search committee for planetary science hire  
Member of graduate admissions committee  
Member of colloquium committee
- 2016  
Founder of undergraduate research opportunities symposium (- present)  
Organizer of weekly APS journal club (- present)

### **External Service**

- 2021  
Science advisor for Heising-Simons Foundation  
Mentor in AAS Dynamical Division of Astronomy (DDA) program
- 2020  
NSF Astronomy and Astrophysics Research Grants (AAG) panel member
- 2019  
SOC member, "New Horizons in Galactic Center Astronomy & Beyond", Japan
- 2018  
LOC member, AAS Dynamical Division of Astronomy (DDA) meeting, Boulder
- 2017  
NASA Astrophysics Theory Program (ATP) panel member  
AAS Dynamical Division of Astronomy committee member (- 2019)

	Session chair at AAS Dynamical Division of Astronomy Conference, London
	Reviewer for The Israel Science Foundation (Joint NSFC-ISF Research Grant)
2015	Reviewer for NASA Earth and Space Science Fellowship (NESSF)
2014	Hubble Space Telescope allocation committee, Cycle 22 panel member

## CU Boulder Examination Committees

[Undergraduate Students](#) and [Graduate Students](#) I advised

2022	Noora Alsaeed	APS Dissertation
	Alex Haughton	APS Comprehensive Exam
	Cole Tamborri	APS Comprehensive Exam
	Kirk Long	APS Comprehensive Exam
	Megan Kenny	APS Comprehensive Exam
	Sajal Gupta	APS Comprehensive Exam
	Tyler Bishop	APS Comprehensive Exam
	<a href="#">Karin Roley</a>	APS undergraduate honors thesis
	Adrienne Pickerel	APS undergraduate honors thesis
	Ben Johnston	APS undergraduate honors thesis
	Conrad Meyer-Reed	APS undergraduate honors thesis
	James Crowley	APS undergraduate honors thesis
	Junyu Chen	APS undergraduate honors thesis
	Patrick McCreery	APS undergraduate honors thesis
	Spencer Hurt	APS undergraduate honors thesis
	Samuel Rodgers	APS undergraduate honors thesis
2021	<a href="#">Alexander Zderic</a>	APS Dissertation
	<a href="#">Heather Wernke</a>	APS Dissertation
	Jessica Libby-Roberts	APS Dissertation
	Aaron Stemo	APS Dissertation
	<a href="#">Tatsuya Akiba</a>	APS Comprehensive Exam
	Hannalore Gerling-Dunsmore	APS Comprehensive Exam
	Joshua Hibbard	APS Comprehensive Exam
	Kya Sorli	APS Comprehensive Exam
	Aimee Schechter	APS Comprehensive Exam
	Amanda Hampton	Applied Math Comprehensive Exam
	<a href="#">Gwendalynn Roebke</a>	General honors thesis
	<a href="#">Alexander Rodriguez</a>	APS undergraduate honors thesis
	<a href="#">Allie Christensen</a>	APS undergraduate honors thesis
	Brenna Royersmith	APS undergraduate honors thesis
	Anna Estes	APS undergraduate honors thesis
	Ferris Bosworth	APS undergraduate honors thesis
	Madeline Pettine	APS undergraduate honors thesis
	Zhiyu Yao	APS undergraduate honors thesis
2020	Daniel Segal	APS Comprehensive Exam

	<a href="#">Hayden Foote</a>	APS undergraduate honors thesis
	<a href="#">Anna Pusack</a>	APS undergraduate honors thesis
	Allyson Leffler	APS undergraduate honors thesis
	John Faulhaber	APS undergraduate honors thesis
	Ryder Strauss	APS undergraduate honors thesis
	Jenna Kishinevsky	Physics undergraduate honors thesis
2019	Zach Milby	APS undergraduate honors thesis
	Dylan Gatlin	APS undergraduate honors thesis
	Maya Yanez	APS undergraduate honors thesis
	Claire Lamman	APS undergraduate honors thesis
	Carlos Eytan Gary Bicas	APS undergraduate honors thesis
	Evan Tucker	Geology undergraduate honors thesis
2018	Erika Zetterlund	APS Dissertation
	<a href="#">Heather Wernke</a>	APS Comprehensive Exam
	<a href="#">Alexander Zderic</a>	APS Comprehensive Exam
	Ryan Diaz-Perez	APS Comprehensive Exam
	Hayley Roberts	APS Comprehensive Exam
	Daniel Brack	Aerospace Engineering Comprehensive Exam
	<a href="#">Jacob Fleisig</a>	APS undergraduate honors thesis
	Amanda Alexander	APS undergraduate honors thesis
	Cami Nasr	APS undergraduate honors thesis
	Ian Cadenhead	APS undergraduate honors thesis
	Odysseus Quarles	APS undergraduate honors thesis
	Parker Hinton	APS undergraduate honors thesis
	Rachel McClure	APS undergraduate honors thesis
2017	Keri Hoadley	APS Dissertation
	Morgan Rehnberg	APS Dissertation
	Aaron Stemo	APS Comprehensive Exam
	Nicole Arulanantham	APS Comprehensive Exam