

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

2022 - present	Associate Professor & JILA Fellow, CU Boulder
2016 - 2022	Assistant Professor & JILA Fellow, CU Boulder
2012 - 2016	NASA Einstein & Theoretical Astrophysics Center (TAC) Postdoctoral Fellow, UC Berkeley

Education

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

Awards & Grants

2025	<i>NSF Astronomy and Astrophysics Grant</i> \$570k grant (PI) <i>“Sensory-Friendly Sundays at CU Boulder’s Fiske Planetarium”, PACES Tier 3</i> \$10.9k grant (PI)
2024	<i>“Sensory-Friendly Planetarium Experiences at CU Boulder”, PACES Tier 1</i> \$2.2k grant (PI)
2021	<i>American Astronomical Society (AAS) Vera Rubin Early Career Prize</i> <i>Outstanding Faculty Mentor Award (CU Boulder)</i> <i>Increasing Diversity in STEM at CU Boulder, Packard Foundation</i>

	\$150k grant (co-PI)
2018	<i>Packard Fellowship for Science and Engineering</i> \$875k grant (PI)
2016	<i>NASA Astrophysics Theory Program</i> \$640k grant (PI)
	<i>NASA Solar System Workings</i> \$600k grant (PI)
2015	<i>NASA Pleiades</i> 7 million CPU hr supercomputing grant (PI)
2014	<i>NSF XSEDE</i> 2.5 million CPU hr supercomputing grant (co-PI)
2012	<i>NASA Einstein Postdoctoral Fellowship</i> (3 years) <i>TAC Postdoctoral Fellowship</i> (UC Berkeley, 1 year)
2010	<i>Martin & Beate Block Award</i> Promising young physicist, Aspen Center for Physics
2011	<i>NWO TopTalent Fellowship</i> Independent Ph.D. research grant, The Netherlands (4 years)

Invited Colloquia* & Seminars

2025	*Iowa State University (November 2025)
2024	*Northwestern University *Theoretical Astrophysics (TAP) Colloquium, University of Arizona
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

2025	CIERA at 15, Northwestern
2022	AAS Division on Dynamical Astronomy, Center for Computational Astrophysics, New York (prize talk)
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

2025 - 2026	Founder of “Sensory Friendly Sundays” at Fiske Planetarium Podcast guest on Jorge Cham’s “ScienceStuff”
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- 2024 Invited Talk for Chautauqua Community House Space Series, Boulder CO
“Supermassive Black Holes in our Backyard!”
- 2021 Invited Talk for Cork Astronomy Club, Ireland
Outreach talk at Pretty Brainy, 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

- Spring 2026 ASTR-3830: Astrophysics II
Undergraduate majors course, 3 credits
- Spring 2025, 2024, 2022, 2021 ASTR-2030: Black Holes
Undergraduate non-majors course, 3 credits
- Fall 2024, 2023, 2020, 2017 ASTR-3710: Formation & Dynamics of Planetary Systems
Undergraduate majors course, 3 credits
- Spring 2019, 2018 ASTR-1030: Accelerated Introduction to Astronomy
Undergraduate majors course, 4 credits
- Fall 2018, 2016 ASTR-5820: Origin & Evolution of Planetary Systems
Graduate course, 3 credits
- Fall 2022 ASTR-5720: Galaxies
Graduate course, 3 credits
- Fall 2020 ASTR-6000: Spiral Arm Formation and Dynamics
Graduate seminar, 1 credit

Students and postdocs advised at CU Boulder

Graduate Students	Drake Miller (co-advising with Prof. Taeho Ryu)	2026 - present
	Constanza Echiburú	2024 - present
	Jane Bright	2023 - 2024
	Tatsuya Akiba	2020 - 2025
	Alexander Zderic	2017 - 2021
	Heather Wernke	2017 - 2021
Postdocs	Dang Pham (McCray Prize Fellow)	2025 - present
	Jane Bright (NFS Fellow)	2025 - present
	Alexander Zderic	2022 - 2023
	Angela Collier (NFS Fellow)	2019 - 2022
	Maria Tiongco	2019 - 2022
	Aleksey Generozov	2018 - 2021
Undergraduates	Nicholas Yurchak	2025 - present
	Gayathri Budamgunta	2025 - present
	Adam Schroeder	2025 - present
	Lucy Walton	2023 - present
	Selah McIntyre	2022 - 2024
	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	2017 - 2018	
Aidan Jared	2017 - 2018	

University Service at CU Boulder

2026-2027	Member of JILA executive committee
	Faculty representative to JILA graduate student group (JAGS)
	Faculty representative to JILA Postdoc group
	Member of Packard Fellowship internal competition review committee
	Member of Natural Sciences (NSCI) Council
2025 - 2026	Member of ARPAC committee
	Member of APS graduate exams committee
	APS Postdoc Liaison
	Member of Tenure Promotion Committee (PUEC)
	Member of Packard Fellowship internal competition review committee
	Panelist for Research and Innovation Office (RIO) Webinar

2024 - 2025	Undergraduate Associate Chair Chair of Undergraduate Curriculum and Concerns committee Member of APS executive committee Member of APS McCray Prize Postdoctoral Fellowship committee Member of Packard Fellowship internal competition review committee
2023 - 2024	Undergraduate Associate Chair Chair of Undergraduate Curriculum and Concerns committee Member of JILA executive committee Member of APS executive committee Member of faculty search committee Chair of Promotion Committee Panelist for JILA postdoc panel on funding Developed and gave seminar on “How to get a Postdoc” for APS students Member of Packard Fellowship internal competition review committee
2022	Chair of FDAP Faculty Search Committee Member of JILA executive committee Member of APS Friday Lunch Seminar committee Member of APS Exams committee Member of Packard Fellowship internal competition review 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 Member of Packard Fellowship internal competition review committee
2020	Member of APS Executive Committee Co-chair of Representation, Recruitment & Retention Department Action Team Panelist for Research and Innovation Office (RIO) Webinar Member of Packard Fellowship internal competition review committee
2019	Member of Packard Fellowship internal competition review committee 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

2025 - 2026	Chair of AAS DDA Rubin Early Career Award Committee 51 Peg prize postdoc panel member for the Heising-Simons Foundation
2024	NASA Hubble Fellowship panel member 51 Peg prize postdoc panel member for the Heising-Simons Foundation
2023	SOC member for AAS Dynamical Division of Astronomy (DDA) conference
2021	Science advisor for Heising-Simons Foundation Mentor in AAS Dynamical Division of Astronomy (DDA) program (- present)
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

2026	Sajal Gupta [April 2026]	APS Dissertation
2025	Tatsuya Akiba	APS Dissertation
	Kya Sorli	APS Dissertation
	Jennifer Reyne Davis	Geology Dissertation
	Leon Chan	APS Comprehensive Exam
	Drake Miller	APS Comprehensive Exam
	Vanessa Brown	APS Comprehensive Exam
	Rachel Slaybaugh	APS Comprehensive Exam
	Malayne Perry	APS undergraduate honors thesis
2024	Jane Bright	University of Arizona Dissertation
	Imogen Cresswell	APS Dissertation
	Maggie Huber	APS Comprehensive Exam
	Connor Antonio Diaz	Geology Comprehensive Exam
2023	Daniel Sega	APS Dissertation
	Constanza Echiburú	APS Comprehensive Exam
2022	Noora Alsaeed	APS Dissertation
	Jennifer Davis	Geology Comprehensive Exam

	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
	Karin Roley	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	Alexander Zderic	APS Dissertation
	Heather Wernke	APS Dissertation
	Jessica Libby-Roberts	APS Dissertation
	Aaron Stemo	APS Dissertation
	Tatsuya Akiba	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
	Gwendalynn Roebke	General honors thesis
	Alexander Rodriguez	APS undergraduate honors thesis
	Allie Christensen	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
	Hayden Foote	APS undergraduate honors thesis
	Anna Pusack	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
	Heather Wernke	APS Comprehensive Exam
	Alexander Zderic	APS Comprehensive Exam
	Ryan Diaz-Perez	APS Comprehensive Exam
	Hayley Roberts	APS Comprehensive Exam
	Daniel Brack	Aerospace Engineering Comprehensive Exam
	Jacob Fleisig	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