

Alexander J. Dittmann

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EDUCATION

2018-present	Graduate study in Astronomy, University of Maryland
2018-2020	M.S. in Astronomy, University of Maryland
2014-2018	B.S. <i>with Highest Distinction</i> in Physics, University of Illinois
2014-2018	B.S. <i>with High Distinction</i> in Astronomy, University of Illinois

RESEARCH EXPERIENCE

2020, Fall	Pre-doctoral Research Assistant, Flatiron CCA	astrophysics
2018-present	Graduate Research Assistant, University of Maryland	astrophysics
2016-2018	Research Assistant, University of Illinois	astrophysics
2016, Summer	SULI Research Assistant, General Atomics	plasma physics
2014-2015	Summer Research Assistant, Catholic University of America	nuclear physics

FELLOWSHIPS AND AWARDS

2020	CCA Pre-Doctoral Fellowship - awarded a five-month research analyst position Flatiron Institute Center for Computational Astrophysics, Fall 2020
2018	Graduate School Dean's Fellowship University of Maryland, Fall 2018 - Summer 2019
2018	Wyatt Award - graduating Astronomy major with most outstanding GPA and research University of Illinois, Department of Astronomy, Spring 2018

PUBLICATIONS

Submitted

2021	On the Terminal Spins of Accreting Stars and Planets: Boundary Layers Dittmann, A. J.
2021	Preventing Anomalous Torques in Circumbinary Accretion Simulations Dittmann, A. J. , Ryan, G. (accepted)

Journal Articles

- 2021 The Radius of PSR J0740+6620 from NICER and XMM-Newton Data
Miller, M. C., Lamb, F. K., **Dittmann, A. J.**, et al., *ApJL* 918, L28
- 2021 NICER Detection of Thermal X-Ray Pulsations from the Massive Millisecond Pulsars
PSR J0740+6620 and PSR J1614–2230
Wolff, M. **et al.**, *ApJL* 918, L26
- 2021 Accretion onto Stars in the Disks of Active Galactic Nuclei
Dittmann, A. J., Cantiello, M., Jermyn, A. S. , *ApJ* 916, 48
- 2021 Stellar Evolution in the Disks of Active Galactic Nuclei Produces Rapidly Rotating Massive Stars
Jermyn, A. S., **Dittmann, A. J.**, Cantiello, M., Perna, R., *ApJ* 914, 105
- 2021 Constraining the Neutron Star Mass-Radius Relation and Dense Matter Equation of State
with NICER. III. Model and Systematics
Bogdanov **et al.**, *ApJL* 914, L15
- 2021 High-Order Multiderivative IMEX Schemes
Dittmann, A. J. *Applied Numerical Mathematics* 160, 205
- 2020 Modified Hermite Integrators of Arbitrary Order
Dittmann, A. J., *MNRAS* 496, 1217
- 2020 Star Formation in Accretion Disks and SMBH Growth
Dittmann, A. J., Miller, M. C., *MNRAS* 493, 3732
- 2019 PSR J0030+0451 Mass and Radius from NICER Data and Implications for the Properties of
Neutron Star Matter
Miller, M. C., Lamb, F. K., **Dittmann, A. J.**, et al., *ApJL* 887, L24
- 2019 Constraining the Neutron Star Mass-Radius Relation and Dense Matter Equation of State
with NICER. II. Emission from Hot Spots on a Rapidly Rotating Neutron Star
Bogdanov S. **et al.**, *ApJL* 887, L26
- 2018 A Candidate Tidal Disruption Event in a Quasar at $z = 2.359$ from Abundance Ratio Variability
Liu, X., **Dittmann, A. J.**, Shen, Y., Jiang, L., *ApJ* 859, 8
- 2018 Separated kaon electroproduction cross section and the kaon form factor from 6 GeV JLab data
Carmignotto, M. **et al.**, *PhysRevC* 97, 025204
- 2017 The Aerogel Čerenkov detector for the SHMS magnetic spectrometer in Hall C at Jefferson Lab
Horn, T. **et al.**, *NIMA* 842, 28
- 2015 PSR J1930–1852: A Pulsar in the Widest Known Orbit Around Another Neutron Star
Swiggum, J. K. **et al.**, *ApJ* 805, 156

ORAL PRESENTATIONS

- 2021 Measuring the Heaviest Known Neutron Star: the Radius of PSR J0740 from X-ray
Data, invited, Compact Objects Group Meeting (CCA), April 22
- 2021 Circumbinary Disks, sink particles, and making simulations less sensitive to tuning
parameters, invited, Hernquist Group Meeting (CfA), March 5
- 2021 Stellar Evolution in AGN Disks, invited, Flatiron/CCA Predoc Symposium, February 26
- 2021 Circumbinary Disks, sink particles, and making simulations less sensitive to tuning
parameters, invited, Compact Objects Group Meeting (CCA), January 28
- 2020 Stars in AGN disks, CCA lunch talk, contributed, October 1
- 2015 Exploring the potential for studies of the electromagnetic structure of the kaon
at 12 GeV JLab, contributed talk, APS DNP, October 31

POSTER PRESENTATIONS

- 2018 A Time-domain Analysis of Nitrogen-Rich Quasars, contributed, Winter AAS, January 10
- 2016 Ray-tracing studies of fast waves in the lower hybrid range of frequencies, contributed, APS DPP, November 1
- 2014 The Optical Characterization of Aerogel Tiles for Cherenkov Detectors at Jefferson Lab, contributed, APS DNP, October 10

TEACHING EXPERIENCE

University of Maryland

2020 - spring	Theoretical Astrophysics	wrote and taught discussions, graded
2020 - spring	Black Holes	graded, helped update lecture material
2019 - fall	General Astronomy	presented 3 lectures, taught discussions and labs, graded
2019 - spring	General Astronomy	taught and graded discussions and labs
2018 - fall	General Astronomy	taught and graded discussions and labs

COMPUTING

Languages C, Python, Fortran, CUDA, IDL
 Tools git, SLURM

SERVICE AND OUTREACH

Journals

Referee ApJ, MNRAS

GRAD-MAP¹

Summer 2021 teaching	prepared and delivered lectures on visualizing multidimensional data using Python and an introduction to programming in C
Summer 2021 mentoring	hydrodynamic simulations of tidal disruption even streams
Winter 2021 teaching	helped run and plan Python bootcamp sessions
Winter 2020 teaching	helped run and plan Python bootcamp sessions
Winter 2020 mentoring	triple system N-body simulations

Undergraduate Curriculum

Introductory labs revised, restructured, and tested new labs

¹<https://www.umdgradmap.org/>