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. *with Highest Distinction* in Physics, University of Illinois
2014-2018	B.S. *with High Distinction* 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 Stellar Evolution in the Disks of Active Galactic Nuclei Produces Rapidly Rotating Massive Stars
Jermyn, A. S., **Dittmann, A. J.**, Cantiello, M., Perna, R.

2021 Accretion onto Stars in the Disks of Active Galactic Nuclei
Dittmann, A. J., Cantiello, M., Jermyn, A. S.

2021 Preventing Anomalous Torques in Circumbinary Accretion Simulations
Dittmann, A. J., Ryan, G.

Journal Articles

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 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	MNRAS

GRAD-MAP[1]

Winter 2021 teaching	helped run and plan Python bootcamp sessions
Winter 2020 teaching	helped run and plan Python bootcamp sessions
Winter 2020 mentoring	undergraduate from Howard University, triple system simulations

Undergraduate Curriculum

Introductory labs	revised, restructured, and tested new labs

[1] https://www.umdgradmap.org/