

Arturo O. Martinez

ASTRONOMER

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Education

Ph.D. - Astronomy

GEORGIA STATE UNIVERSITY

Atlanta, GA, USA
Fall 2016 – Summer 2021

- Title of dissertation: “Exploring Interferometric Realms: Modeling and Imaging of Stars, and Optical Test Bench Simulations”

M.S. – Physics (with concentration in Astronomy)

GEORGIA STATE UNIVERSITY

Atlanta, GA, USA
Fall 2016 – Spring 2018

Graduate Student

SAN DIEGO STATE UNIVERSITY

San Diego, CA, USA
Fall 2015 – Summer 2016

B.S. – Astronomy (with Math Minor)

SAN DIEGO STATE UNIVERSITY

San Diego, CA, USA
Fall 2011 - Spring 2015

Research Interests

My current research interests lies in stellar astronomy in topics such as calculating stellar parameters, and image reconstruction through optical interferometry. My recent work involved imaging rapid rotators, imaging spotted stars, and 3D stellar modeling. I am currently working in speckle interferometry and developing software for wide-field/extended speckle targets. Other current research interests include image restoration and combining astronomy with modern technology (using virtual reality).

Research Experience

Research Scientist

BAY AREA ENVIRONMENTAL RESEARCH INSTITUTE & NASA AMES RESEARCH CENTER

Atlanta, GA, USA
July 2021 – Present

- I am currently porting a new speckle imaging code for wide community use. I will implement wavelength diversity into CMFBD within this new code.

Graduate Research Assistant (Advisor: Prof. Fabien Baron)

DEPARTMENT OF PHYSICS & ASTRONOMY, GEORGIA STATE UNIVERSITY

Atlanta, GA, USA
January 2017 – June 2021

- My research with Prof. Baron consisted of constructing a 3D stellar interferometric imaging code. I used the Center for High Angular Resolution Astronomy (CHARA) Array to collect data of rapid rotators and spotted stars.

Researcher (Advisor: Prof. Eric Sandquist)

DEPARTMENT OF ASTRONOMY, SAN DIEGO STATE UNIVERSITY

San Diego, CA, USA
January 2014 – August 2016

- My research with Prof. Sandquist involved eclipsing binary stars in order to derive a precise age in the star cluster M 37. I specifically looked at two eclipsing binaries in order to constrain their periods by producing light curves.

Visiting Researcher (Advisor: Prof. Ian Crossfield)

STEWART OBSERVATORY, UNIVERSITY OF ARIZONA

Tucson, AZ, USA
June 2015 – August 2015

- As part of the California-Arizona Minority Partnership for Astronomy Research and Education (CAMPARE), I worked under the guidance of Prof. Crossfield to find stellar and planetary parameters for various K2 objects of interest.

Honors & Awards

American Astronomical Society FAMOUS Grant, January 2020

Second Century Initiative University Doctoral Fellow, August 2016 – July 2020

Cal-Bridge Scholar, October 2014 – July 2016

Atlanta, GA, USA
San Diego, CA, USA

Technical and Personal Skills

Programming	Julia, Fortran 77/90, Python
Document Preparation	TEX
Web	HTML, CSS, Wordpress
Linguistics	English (native), Spanish (conversant)
Observing	<ul style="list-style-type: none">• Photometry (with SDSU's 1-m telescope at Mount Laguna Observatory)• Spectroscopy (using SOFI and EFOSC2 on the New Technology Telescope)• Interferometry (using MIRC-X and briefly with CLIMB at the CHARA Array)

Accepted Observing Proposals as PI

2020B	The CHARA Array , Contemporaneous Imaging of Rapid Rotators with CHARA/MIRC-X and NPOI/VISION	<i>8 full nights</i>
2020A	The CHARA Array , Contemporaneous Imaging of Rapid Rotators with CHARA/MIRC-X and NPOI/VISION	<i>2 full, 13 half nights</i>
2019B	The CHARA Array , Contemporaneous Imaging of Rapid Rotators with CHARA/MIRC-X and NPOI/VISION	<i>2 full, 4 half nights</i>
2019A	The CHARA Array , Imaging Rapid Rotators with CHARA/MIRC-X	<i>9 full, 3 half nights</i>
2018B	The CHARA Array , Imaging Rapid Rotators with CHARA/MIRC-X	<i>5 full nights</i>
2018A	The CHARA Array , Monitoring Spotty Stars with MIRC-X	<i>3 full, 6 half nights</i>
2018A	The CHARA Array , Imaging Rapid Rotators with CHARA/MIRC-X	<i>7 full nights</i>
2017B	The CHARA Array , Imaging Rapid Rotators with CHARA/MIRC-X	<i>2 full, 2 half nights</i>

Presentations

Science by Diverse Scientists: A Cal-Bridge Physics & Astronomy Seminar Series

Online

INVITED TALK

December 1, 2020

- Presented PhD research: "Exploring Current and Future Interferometric Imaging"

American Astronomical Society Meeting

Honolulu, HI, USA

IPOSTER PRESENTATION

January 2020

- Presented PhD research: "Interferometric 3D imaging of lambda Andromedae"

CHARA Meeting

Flagstaff, AZ, USA

RESEARCH TALK

March 19, 2019

- Presented PhD research: "Updates to Stellar Surface Imaging & Modeling"

NSF Presentation at CHARA Array

Mt. Wilson, CA, USA

RESEARCH TALK

July 18, 2018

- Presented PhD research related to CHARA: "Imaging Stars with MIRC-X"

American Astronomical Society Meeting

Kissimmee, FL, USA

POSTER PRESENTATION

January 2016

- Presented CAMPARE summer research: "Stellar and Planetary Parameters for K2's Late-type Dwarf Systems from C1 to C5"

K2SciCon Meeting

Santa Barbara, CA, USA

POSTER PRESENTATION

November 2015

- Presented CAMPARE summer research: "Stellar and Planetary Parameters for K2's Late-type Dwarf Systems from C1 to C5"

Lunar and Planetary Laboratory Conference

Tucson, AZ, USA

RESEARCH TALK

August 20, 2015

- Presented CAMPARE summer research: "Stellar and Planetary Parameters for K2's Late-type Dwarf Systems from C1 to C5"

Roles/Committees

Computing Committee

GSU PHYSICS & ASTRONOMY

Atlanta, GA, USA
January 1, 2020 – June 30, 2021

Publicity and Outreach Committee

GSU PHYSICS & ASTRONOMY

Atlanta, GA, USA
January 1, 2020 – June 30, 2021

Web/Media Manager

GSU PHYSICS GRADUATE STUDENT ASSOCIATION

Atlanta, GA, USA
July 1, 2019 – June 30, 2020

Department Webmaster

GSU PHYSICS & ASTRONOMY

Atlanta, GA, USA
July 1, 2018 – June 30, 2021

Teaching Experience

Georgia State University

LECTURER - INTRODUCTORY ASTRONOMY COURSE

Atlanta, GA, USA
Jan 2020 – May 2020

- Part of a two semester intro-level course, ASTR 1020 covers the physical properties of stars, their formation and evolution, as well as our galaxy and others, and the origin and evolution of the Universe in a classroom and online setting.

Georgia State University

TEACHING ASSISTANT - LAB INSTRUCTOR

Atlanta, GA, USA
Aug 2016 – Dec 2019

- The laboratory portion of a two-semester course on astronomy. Graduate lab instructors prepare an introduction to the topic, assist students with completing the lab and understanding key concepts.

San Diego Learning Center

EDUCATOR

Chula Vista, CA, USA
October 2013 – March 2015

- At the SDLC, my main job was to help students, anywhere from first grade to college freshman in Algebra 1, Geometry, Trigonometry, Calculus, Astronomy, and Physics.

Mentoring

AstroPal Mentor

AS GRADUATE MENTOR

Georgia State University
August 2018 - July 2020

- Mentor incoming graduate students to adapt to graduate PhD level environment.

Graduate Mentor

RESEARCH GROUP MENTOR

Georgia State University
Summer 2017 - Summer 2019

- Acted as graduate student advisor to an undergraduate in our research group.

Cal-Bridge Mentor

AS GRADUATE MENTOR

January 2018 - May 2020

- Mentor current Cal-Bridge Scholars to assist them with the undergraduate to graduate school transitions.

Outreach

Volunteer Activities for Total Solar Eclipse

RABUN GAP NACOOCHEE SCHOOL

Rabun Gap, GA, USA
August 21, 2017

- Assisted Rabun Gap County with total solar eclipse (e.g., maintaining telescope).

Georgia Buddhist Summer Camp

HARD LABOR CREEK OBSERVATORY

Rutledge, GA, USA
June 9, 2017

- Gave a talk to the Georgia Buddhist Summer Camp group, which included many newcomers to astronomy (half of which were children). Also showed guests the observatory, telescopes, and celestial objects.

Open House

HARD LABOR CREEK OBSERVATORY

Rutledge, GA, USA
Multiple Dates

- Gave a public showing of different telescopes and celestial objects through the telescopes twice a year starting in 2017.

Publications

First Author

Dynamical Surface Imaging of λ Andromedae

Martinez, A. O., Baron, F. R., Monnier, J. D., Roettenbacher, R. M., Parks, J. R.,
ApJ arXiv:2107.06366, July 2021.

Looking into the future of interferometry using free-space beam propagation

Martinez, A. O., Abbott, C. G., Jefferies, S. M., ten Brummelaar, T. A., Baron, F. R.,
Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series vol. 11446 114461B, Dec. 2020.

Stellar and Planetary Parameters for K2s Late-type Dwarf Systems from C1 to C5

Martinez, A. O., Crossfield, I. J. M., Schlieder, J. E., Dressing, C. D., Obermeier, C., Livingston, J., Ciceri, S., Peacock, S., Beichman, C. A., Lépine, S., Aller, K. M., Chance, Q. A., Petigura, E. A., Howard, A. W., Werner, M. W.,
ApJ, 837 p. 72, Mar. 2017.

Contributing Author

Long Term Evolution of Surface Features on the Red Supergiant AZ Cyg

Norris, R. P., Baron, F. R., Monnier, J. D., Paladini, C., Anderson, M. D., **Martinez, A. O.**, Schaefer, G. H., Che, X., Chiavassa, A., Connelley, M. S., Farrington, C. D., Gies, D. R., Kiss, L. L., Lester, J. B., Montargès, M., Neilson, H. R., Majoinen, O., Pedretti, E., Ridgway, S. T., Roettenbacher, R. M., Scott, N. J., Sturmann, J., Sturmann, L., Thureau, N., Vargas, N., ten Brummelaar, T. A.,
arXiv e-prints arXiv:2106.15636, June 2021.

A versatile turbulence simulator for high-resolution imaging studies of astronomical targets

Abbott, C. G., **Martinez, A. O.**, Jefferies, S. M., ten Brummelaar, T., Baron, F. R.,
Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series vol. 11448 114483T, Dec. 2020.

Characterizing K2 Candidate Planetary Systems Orbiting Low-Mass Stars IV: Updated Properties for 86 Cool Dwarfs Observed During Campaigns 1-17

Dressing, C. D., Hardegree-Ullman, K., Schlieder, J. E., Newton, E. R., Vand erburg, A., Feinstein, A. D., Duvvuri, G. M., Arnold, L., Bristow, M., Thackeray, B., Schwab Abrahams, E., Ciardi, D. R., Crossfield, I. J. M., Yu, L., **Martinez, A. O.**, Christiansen, J. L., Crepp, J. R., Isaacson, H.,
The Astronomical Journal, 158 p. 87, Aug. 2019.

Spitzer Transit Follow-up of Planet Candidates from the K2 Mission

Livingston, J. H., Crossfield, I. J. M., Werner, M. W., Gorjian, V., Petigura, E. A., Ciardi, D. R., Dressing, C. D., Fulton, B. J., Hirano, T., Schlieder, J. E., Sinukoff, E., Kosiarek, M., Akesson, R., Beichman, C. A., Benneke, B., Christiansen, J. L., Hansen, B. M. S., Howard, A. W., Isaacson, H., Knutson, H. A., Krick, J., **Martinez, A. O.**, Sato, B., Tamura, M.,
AJ, 157 p. 102, Mar. 2019.

Planetary Candidates from K2 Campaign 16

Yu, L., Crossfield, I. J. M., Schlieder, J. E., Kosiarek, M. R., Feinstein, A. D., Livingston, J. H., Howard, A. W., Benneke, B., Petigura, E. A., Bristow, M., Christiansen, J. L., Ciardi, D. R., Crepp, J. R., Dressing, C. D., Fulton, B. J., Gonzales, E. J., Hardegree-Ullman, K. K., Henning, T., Isaacson, H., Lépine, S., **Martinez, A. O.**, Morales, F. Y., Sinukoff, E.,
AJ, 156 p. 22, July 2018.

197 Candidates and 104 Validated Planets in K2s First Five Fields

Crossfield, I. J. M., Ciardi, D. R., Petigura, E. A., Sinukoff, E., Schlieder, J. E., Howard, A. W., Beichman, C. A., Isaacson, H., Dressing, C. D., Christiansen, J. L., Fulton, B. J., Lépine, S., Weiss, L., Hirsch, L., Livingston, J., Baranec, C., Law, N. M., Riddle, R., Ziegler, C., Howell, S. B., Horch, E., Everett, M., Teske, J., **Martinez, A. O.**, Obermeier, C., Benneke, B., Scott, N., Deacon, N., Aller, K. M., Hansen, B. M. S., Mancini, L., Ciceri, S., Brahm, R., Jordán, A., Knutson, H. A., Henning, T., Bonnefoy, M., Liu, M. C., Crepp, J. R., Lothringer, J., Hinz, P., Bailey, V., Skemer, A., Defrere, D.,
ApJS, 226 p. 7, Sept. 2016.

Kepler Eclipsing Binary Stars. VII. The Catalog of Eclipsing Binaries Found in the Entire Kepler Data Set

Kirk, B., Conroy, K., Prša, A., Abdul-Masih, M., Kochoska, A., Matijevič, G., Hambleton, K., Barclay, T., Bloemen, S., Boyajian, T., Doyle, L. R., Fulton, B. J., Hoekstra, A. J., Jek, K., Kane, S. R., Kostov, V., Latham, D., Mazeh, T., Orosz, J. A., Pepper, J., Quarles, B., Ragozzine, D., Shporer, A., Southworth, J., Stassun, K., Thompson, S. E., Welsh, W. F., Agol, E., Derekas, A., Devor, J., Fischer, D., Green, G., Gropp, J., Jacobs, T., Johnston, C., LaCourse, D. M., Saetre, K., Schwengeler, H., Toczyski, J., Werner, G., Garrett, M., Gore, J., **Martinez, A. O.**, Spitzer, I., Stevick, J., Thomadis, P. C., Vrijmoet, E. H., Yenawine, M., Batalha, N., Borucki, W.,
AJ, 151 p. 68, Mar. 2016.