Dr. Amazo-Gómez, E. M.

Curriculum Vitae

Research Experience

Postdoctoral Research – Current Position

Nov – 2020 **PRESENCE project:**, ***P**lanet **R**elated **E**ffects on **S**t**E**llar abu**N**dan**C**es & magn**E**tism*, At the Stellar Physics and Exoplanets section of the Cosmic Magnetic Fields branch at Leibniz-Institute for Astrophysics Potsdam (AIP), Potsdam, Germany.
Group Leader: Prof. Dr. Katja Poppenhaeger

Pre-Doctoral Program

WiSe – 2019 **Multi-wavelength analysis of the young Sun Iota Horologii: A giant-planet host**, At the High Energy Astrophysics Division (HEAD) – Center for Astrophysics | Harvard & Smithsonian (CfA), Cambridge, MA USA.
Group Leader: Jeremy J. Drake

Education

PhD in Science (Dr. rer. nat.)

Oct – 2020 **"Understanding brightness variations of Sun-like stars on timescale of stellar rotation"**, At the International Max Planck Research School for Solar System Science at the Max Planck Institute for Solar System Research & Fakultät für Physik der Georg-August-Universität Göttingen. Dissertation date: October 27th 2020, Göttingen, Germany.

Supervisors **Dr. Alexander I. Shapiro**, Researcher Scientist - Head of Solar and Stellar Variability group (SOLVe) funded by the ERC Starting Grant at Max Planck Institute for Solar System Research (MPS)

Prof. Dr. Sami K. Solanki, Director of the Sun-Heliosphere Department at Max Planck Institute for Solar System Research (MPS)

Prof. Dr. Ansgar Reiners, Professor of Astrophysics at Georg-August-Universität Göttingen

Master of Science (M.Sc.) in Astrophysics

Sep – 2016 **"Observational study of convection related phenomena in cool main sequence stars"**, At the Fakultät für Physik der Ludwig-Maximilians-Universität. Program completed in 1.5 of 2.0 - Years, München, Germany.

Supervisors **Dr. Gaitee Hussain**, Head of Science Division, European Space Agency (ESA)

Prof. Dr. Thomas Preibisch, Leader of the Young Stars and Star Formation Group (USM), Professor for Astrophysics at Ludwig-Maximilians-Universität (LMU)

Bachelor of Science (B.Sc.) in Physics

Apr – 2014 **"Determination of the Geomagnetic Bow Shock position & interaction angle with the Solar Wind using THEMIS Data"**, At the Universidad Nacional de Colombia, Bogotá, Colombia.

Supervisors **Prof. Benjamín Calvo-Mozo**, Associate Professor, (OAN-UNAL Colombia)

Dr. Forrest Mozer, Associate Director, Space Sciences Laboratory (SSL USA)

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Research Interests

- Magnetic Fields
- Abundances: Lithium problem
- Faculae to spot coverage
- Chromospheric Activity
- Photometry - Spectroscopy - Polarimetry
- Stellar Rotation Periods

Trainings & Internships

Jan – Feb 2020 **Programme for Cooperation between Portugal and Germany (DAAD-FCT)**, Centro de Astrofísica da Universidade do Porto (CAUP).
Porto – Portugal

March 2019 **TESS Ninja meeting II: Building Early Science with TESS**, University of Chicago.
Chicago – USA

Sep – Oct 2015 **Synthesis and Abundance measurements using MOOG code**, (One week training), Centro de Astrofísica da Universidade do Porto (CAUP).
Porto – Portugal

Sep – Nov 2014 **The Leibniz-Graduate School for Quantitative Spectroscopy in Astrophysics**, Leibniz Institute for Astrophysics Potsdam (AIP).
Potsdam, Brandenburg – Germany

Dec – Mar 2013-14 **Winter Research Internship in Stellar Structure and Evolution**, Max Planck Institute for Astrophysics (MPA).
Garching, Bavaria – Germany

Jun – Aug 2013 **Summer Internship in Astrophysics and Astronomical Instrumentation.**, Instituto Nacional de Astrofísica, Óptica y Electrónica (INAOE).
Santa Maria de Tonantzintla, Puebla – México

Summer & Winter Schools

Dec – Jan 2016 **33rd Jerusalem Winter School in Theoretical Physics on: "Exoplanets"**, The Israel Institute for Advanced Studies at The Hebrew University of Jerusalem.
Jerusalem – Israel

Jul – Aug 2014 **CISM Space Weather Summer School 2014**, National Center for Atmospheric Research (NCAR), High Altitude Observatory (HAO) & National Science Foundation (NSF).
Boulder, Colorado – USA

May – Jun 2013 **Space Weather Summer School 2013** , The University of Alabama in Huntsville – Center for Space Plasma and Aeronautic Research (CSPAR).
Huntsville, Al – USA

Jun – Jul 2012 **International Summer School – Solar Astrophysics: Modern Trends and Techniques**, Universidad Nacional de Colombia – Observatorio Astronómico Nacional.
Bogotá – Colombia

Aug 2010 **Extragalactic Astrophysics Summer School**, Universidad Nacional de Colombia – Observatorio Astronómico Nacional.
Bogotá – Colombia

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Participation on accepted proposals

Weaving the history of the solar wind with magnetic field lines.

Type: Cycle 25 General Observer (GO) Proposal
PI: Alvarado-Gómez, J. D.
Co-I: Amazo-Gómez, E. M.; Cohen, O.; Drake, J.; Garraffo, C.; Hussain, G. A. J.; Moschou S.; Redfield,S.; Sanz-Forcada, J.; Stelzer, B.; Wood, B.
Telescope: Hubble Space Telescope – HST
Instrument: The Space Telescope Imaging Spectrograph – STIS
Period: Cycle 25 & Cycle 26
Alloc. time: 15 Orbits (12 for Cycle 25 and 3 for Cycle 26)

The magnetic cycle and planetary environment of the young Sun ι Horologii: The reign of the positive polarity.

Type: Observing Time Proposal
PI: Alvarado-Gómez, J. D.
Co-I: Hussain, G. A. J.; Drake, J.; Sanz-Forcada, J.; Stelzer, B.; Cohen, O.; Amazo-Gómez, E. M.; Grunhut, J.; Donati J.-F.
Telescope: ESO 3.6m
Instrument: High Accuracy Radial velocity Planet Searcher polarimeter – HARPSpol
Period: P100
Alloc. time: 40.0 Hours | Top-Ranked proposal

The magnetic cycle and planetary environment of the young Sun ι Hor: Catching the polarity reversal.

Type: Observing Time Proposal
PI: Alvarado-Gómez, J. D.
Co-I: Hussain, G. A. J.; Drake, J.; Sanz-Forcada, J.; Stelzer, B.; Cohen, O.; Amazo-Gómez, E. M.; Grunhut, J.; Donati J.-F.
Telescope: ESO 3.6m
Instrument: HARPSpol
Period: P99
Alloc. time: 45.0 Hours | Top-Ranked proposal

The magnetic cycle and planetary environment of the young Sun ι Hor: Towards activity minimum.

Type: Observing Time Proposal
PI: Alvarado-Gómez J.D.
Co-I: Hussain, G. A. J.; Cohen, O.; Sanz-Forcada, J.; Stelzer, B.; Amazo-Gómez, E. M.; Grunhut, J.; Drake, J.
Telescope: ESO 3.6m
Instrument: HARPSpol
Period: P98
Alloc. time: 40.0 Hours | Top-Ranked proposal

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Invited Seminar talks

22 Jan 2020 **Using GPS method to determine stellar rotation periods and faculae to spot ratio**.
Astrophysics Seminar, Centro de Astrofísica da Universidade do Porto, Porto, Portugal.

11 Dec 2017 **GPS: A novel method to obtain rotational periods on Sun-like stars**.
Stars and Planets Seminar, Harvard Smithsonian Center for Astrophysics, Cambridge, USA.

06 Dec 2017 **GPS: A novel method to obtain rotational periods on Sun-like stars**.
TESS science center at Kavli Institute – MIT. GPS: A novel method to obtain rotational periods on Sun-like stars, Cambridge, USA.

20 Oct 2016 **Magnetism and lithium relation in Sun-like stars**.
Observatorio Astronómico Nacional de Colombia, Bogotá, Colombia.

30 Sep 2015 **Solar and stellar magnetic activity, Line Profile Variations In Cool Stars Finding a Physical Correlation Between Li Abundance And Chromospheric Activity: The Planet-Host Search: expanded sample**.
Cookies Seminar series, Centro de Astrofísica da Universidade do Porto, Porto, Portugal.

08 Jul 2013 **Determinación de la posición del arco de choque geomagnético (Bow Shock), y del ángulo de interacción con el viento solar para cruces medidos por el satélite THEMIS-C**.
Seminar of cycle CyA, Instituto Nacional de Astrofisíca Óptica y Electrónica, INAOE, Santa Maria de Tonantzintla, México.

International Conferences

Contributed Talks

30 Jul 2019 **Comprehensive Analysis of Simultaneous Photometric and Spectropolarimetric Data in a Young Sun-like Star: Rotation Period, Variability, Activity & Magnetism**, MIT/Cambridge, USA.
TESS Science Conference I

10 Sep 2018 **Accurate rotational periods from GPS method**, Göttingen, DE.
Observing the Sun as a Star: Would we find the solar system if we saw it?.

29 Aug 2018 **From the Sun other CoolStars: Accurate rotational periods from GPS method**, Boston, USA.
Cool Stars 20: Cambridge Workshops of Cool Stars, Stellar Systems and the Sun.

23 Feb 2018 **A novel method to obtain stellar rotational periods**, Jaipur, India.
IAU Symposium 340.

11 Jul 2017 **Inflection point of the power spectra of brightness variations of Sun-like stars on timescale of stellar rotation: A novel method to obtain stellar rotational periods**, Montpellier, France.
BCool 2017.

13 Jun 2017 **Understanding brightness variations of Sun-like stars on timescale of stellar rotation**, Potsdam, Germany.
14th Potsdam Think-shop, Stellar Magnetism: Challenges, Connections, and Prospects.

11 Oct 2016 **Magnetism and lithium relation in Sun-like stars**, Cartagena, Colombia.
IAUS 327: Fine Structure and Dynamics of the Solar Atmosphere.

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03 Oct 2016 **Observational study of convection related phenomena in cool main sequence stars (K-G-F)**, Cartagena, Colombia.
XV LARIM 2016.

05 Jul 2016 **Convection related phenomena in cool main sequence stars.**, Athens, Greek.
EWASS meeting 2016

03 Feb 2015 **Solar and stellar magnetic activity, Line Profile Variations In Cool Stars Finding a Physical Correlation Between Li Abundance And Chromospheric Activity: The Planet-Host Search**, Palermo,Italy.
2nd SOLARNET MEETING

07 Aug 2014 **Teaching tools useful to understand the Space Weather, through kinematic analysis of some CME**, Moscow, Russia.
The 40th COSPAR Scientific Assembly, COMMITTEE ON SPACE RESEARCH (COSMOS-COSPAR 2014)

06 Nov 2012 **Estimación de la Ubicación del Arco de Choque y del angulo Θ(B,n) cuasi-perpendicular Magnetosférico, por medio de datos de 14 diferentes cruces de eventos de choque registrados por THEMIS-C.**, Bucaramanga, Colombia.
COCOA, III Colombian Congress of Astrophysics.

Computational skills

GPS Developer of the gradient of power spectra code, GPS

PL Programming languages: IDL, Phyton (basic)

AT Astrophysical tools: REDUCE, LSD, MOOG, IRAF, SSWIDL, THEMIS TDAS, Period04

DB Data Base and Catalogues experience: MAST, PolarBase, VALD 2-3, PHASE3, StarAlt, SIMBAD

WP Word Processing Software: LaTeX, OpenOffice, Office

OS Operative Systems: Windows, Linux, MacOS

Teaching and tutoring experience

WiSe 2018/19 Tutor at lecture Solar System Science: The Planetary Systems at Georg-August-Universität Göttingen – Göttingen Germany

WiSe 2017/18 Tutor at lecture Introduction to Astrophysics: "Einführung in die Astrophysik" at Georg-August-Universität Göttingen – Göttingen Germany

SoSe 2016 Tutor IDL skills to Master Student at Georg-August-Universität Göttingen – Göttingen Germany

2012 – 2014 Astronomy, Math and Physics Teacher at John Dewey High School – Bogotá Colombia

2008 – 2010 Teaching assistant at lecture Science Technology and Development at Universidad Nacional de Colombia, Faculty of Science, Physics Department – Bogotá Colombia

Acquired funding

2017 Allocated grant for Pre-Doctoral program at CfA, HST Proposal N^{o}15299 (US$34.000)

2014 Leibniz-Graduate School (LGS) Scholarship (US$4.000)

2014 CISM SS2014 Scholarship (US$2.500)

2013 Beneficiary Credit Program, Colfuturo, Colombia (US$36.000)

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Awards

2014 Beneficiary Scholarship Program, Colfuturo, Colombia

2010 First Place, "48 Horas para Innovar", Decathlon Project - Kalenji.

2005 Best Score ICFES Test at IED Sorrento, High School, Colegio Distrital Sorrento, Bogotá Colombia

2003 Academic Honour Mention, High School, Colegio Distrital Sorrento, Bogotá Colombia

Press release & Interviews

Media: YouTube, Conferencia: Gemelos Solares que tan Unico es nuetro Sol? Orígenes de la UdeA - Feb 2021, Medellín - Berlin.

Media: YouTube, Entrevista para programa Orígenes de la UdeA - Feb 2021, Medellín - Berlin.

Media: MPS public relations, Tackling Brightness Variations of Stubborn Stars. Oct 2020, Göttingen, Germany.

Media: Göttinger tageblatt, 200 Doktorandin am Göttinger Max-Planck-Institut für Sonnensystemforschung - Oct 2020, Göttingen, Germany.

Media: El Tiempo, El Sol es mas activo que otras estrellas similares. May 2020, Bogotá, Colombia.

Media: *Uni Atacama* - July 2019, Copiapo, Chile.

Media: *Astro Mujeres* - July 2019.

Media: *El Tiempo* - November 2019, Bogotá, Colombia.

Media: *El Espectador* - November 2019, Bogotá, Colombia.

Media: *Lo Más Leido* - November 2018, Bogotá, Colombia.

Outreach, Leadership roles & Community Service

Sep 6-7 2018 **Invited Speaker at the Distrital Forum of Education 2018 – FED2018**, Bogotá, Colombia.
I was invited to participate as panelist at the FED2018 with the purpose to encourage girls to join science as a future carrier and live project.

2018 to date **AstroChia-Group**, Bogotá, Colombia.
Co-founder and part of a group of women astrophysicists involved in the promotion of astrophysics programs for young students.

2015 to 2016 **Young Stars** & **Star Formation Group**, München, Germany.
I was part of the Young Stars & Star Formation Group of the Universitäts-Sternwarte München, where I went involved in the organisation of the "Lunch & cookies seminar".

2012 to date **GOSA-Group**, Bogotá, Colombia.
I was part of the Group of Solar Astrophysics of the "Observatorio Astronómico Nacional de Colombia" where I was involved In the promotion of the solar astrophysics program for different students.

2006 – 2011 **ACEFI**, Bogotá, Colombia.
During my B.Sc. in Physics, I participated in the student project ACEFI (Spanish acronym for Colombian Association of Physics Students). We developed projects of science and physics promotion for groups of young students. We, in conjunction with the Bogotá City Hall promoted Astronomy in children between 7 and 10 years old. The different projects were presented during the National Technology and Science Meeting (Expociencia Expotecnología 2011).

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Languages

Spanish	**Mother-tongue**	
English	**Fluent**	*Conversationally fluent*
German	**Basic**	*Basic words and phrases only*

External Interests

- Photography
- Cooking
- Mountain Hiking
- Painting
- Dancing
- Climbing

References

Prof. Dr. Katja Poppenhaeger, Head of Stellar Physics and Exoplanets group, branch: Cosmic Magnetic Fields at Leibniz-Institut für Astrophysik Potsdam (AIP) and, Astrophysics Professor at Univ. Potsdam.
kpoppenhaeger@aip.de

Prof. Dr. Klaus G. Strassmeier, Director of research branch: Cosmic Magnetic Fields at Leibniz-Institut für Astrophysik Potsdam (AIP) and, Astrophysics Professor at Univ. Potsdam.
kstrassmeier@aip.de

Dr. Alexander Shapiro, Researcher Scientist - Head of Solar and Stellar Variability group (SOLVe), *Max Planck Institute for Solar System Research (MPS)*.
shapiroa@mps.mpg.de

Prof. Dr. Sami K. Solanki, Director of the Sun-Heliosphere Department, *Max Planck Institute for Solar System Research (MPS)*.
solanki@mps.mpg.de

Dr. Jeremy J. Drake, Senior Astrophysicist at the High Energy Astrophysics Division (HEAD), *Smithsonian Astrophysical Observatory of the Harvard-Smithsonian Center for Astrophysics in Cambridge (CfA)*.
jdrake@cfa.harvard.edu

Dr. Greg Kopp, Senior Research Scientist at the Laboratory for Atmospheric and Space Physics (LASP), *University of Colorado Boulder (CU)*.
Greg.Kopp@lasp.colorado.edu

Prof. Dr. Thomas Preibisch, Leader of the Young Stars and Star Formation Group, Professor for Astrophysics, *Universitäts-Sternwarte München (USM), Ludwig-Maximilians-Universität (LMU)*.
preibisch@usm.uni-muenchen.de

Dr. Gaitee Hussain, Head of Science Division, *European Space Agency (ESA)*.
ghussain@eso.org – hussain.gaitee@gmail.com

Prof. Benjamín Calvo Mozo, Associate Professor, Observatorio Astronómico Nacional (OAN), *National University of Colombia*.
bcalvom@unal.edu.co

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Refereed Publications

Inflection point in the power spectrum of stellar brightness variations III: Facular versus spot dominance on stars with known rotation periods, Amazo-Gómez, E. M.; Alexander I. Shapiro; Sami K. Solanki; Natalie A. Krivova; Greg Kopp; Timo Reinhold; Mahmoudreza Oshagh; Ansgar Reiners.
Astronomy & Astrophysics, A&A, 2020b.

Inflection point in the power spectrum of stellar brightness variations: II. The Sun, Amazo-Gómez, E. M.; Alexander I. Shapiro; Sami K. Solanki; Natalie A. Krivova; Greg Kopp; Timo Reinhold; Mahmoudreza Oshagh; Ansgar Reiners.
Astronomy & Astrophysics, A&A, 2020a.

Inflection point in the power spectrum of stellar brightness variations. I. The model, A.I. Shapiro; Amazo-Gómez, E. M.; N.A. Krivova; S.K. Solanki.
Astronomy & Astrophysics, A&A, 2019

The Sun is less active than other solar-like stars, Timo Reinhold; Alexander I. Shapiro; Sami K. Solanki; Benjamin T. Montet; Natalie A. Krivova; Robert H. Cameron; Amazo-Gómez, E. M.
Accepted in Science Journal, 2020.

Decoding the radial velocity variations of HD41248 with ESPRESSO, J. P. Faria; V. Adibekyan; Amazo-Gómez, E. M.; S. C. C. Barros; J. D. Camacho; O. Demangeon; P. Figueira; A. Mortier; M. Oshagh; F. Pepe; N. C. Santos; J. Gomes da Silva; A. R. C. Silva; S. G. Sousa; S. Ulmer-Moll; P. T. P. Viana.
Astronomy & Astrophysics, A&A, 2019

The correlation between photometric variability and radial velocity jitter: Based on TESS and HARPS observations., Saeed Hojjatpanah; Santos, N. C.; Oshagh, M.; Figueira, P.; Amazo-Gómez, E. M. ; V. Adibekyan; Demangeon, O.; J. P. Faria; Meunier, N.; Sousa, S. G..
Accepted in Astronomy & Astrophysics, A&A, 2020.

Far beyond the Sun – I. The beating magnetic heart in Horologium, Alvarado-Gómez, J. D.; R.Hussain, G. A. J.; Drake, J. J.; Donati, J-F.; Sanz-Forcada, J.; Stelzer, B.; Cohen, O.; Amazo-Gómez, E. M.; Grunhut, J. H.; Garraffo, C.; Moschou, S. P.; Silvester, J.; Oksala, M. E..
Monthly Notices of the Royal Astronomical Society, MNRAS, 2018

Lithium abundance in a sample of solar-like stars, López-Valdivia, R.; Hernández-Águila, J. B.; Bertone, E.; Chávez, M.; Cruz-Saenz de Miera, F.; Amazo-Gómez, E. M .
Monthly Notices of the Royal Astronomical Society, MNRAS, 2015

Forthcoming Publications

Magnetic field and lithium abundance correlation in cool main sequence stars, Amazo-Gómez, E. M.; J. D. Alvarado-Gómez; G. A. J. Hussain; T. Preibisch; M. Oshagh; E. Delgado Mena; S. G. Sousa; N. C. Santos.
(To publish in MNRAS). In prep.

Comprehensive analysis of the young Sun Iota Horologii: a giant-planet host, Amazo-Gómez, E. M.; J. D. Alvarado-Gómez; J. J. Drake; Gaitee A. J. Hussain; Jean-François Donati.
In prep.

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Non-refereed Publications

GPS, decrypting brightness variations of the Sun and Sun-like stars., Amazo-Gómez, E. M.; Shapiro, Alejandro I .; Solanki, Sami K .; Kopp, Greg; Oshagh, Mahmoudreza; Reinhold, Timo; Krivova, Natalie A .; Reiners, Ansgar.
Proceedings of the Solar Atmospheric and Interplanetary Environment (SHINE 2019)

Line Profile Variations of Solar Analog Stars: Chromospheric Indexes vs. Li Abundance: The Host Star Search, Amazo-Gómez, E. M.; Harutyunyan, G.; Alvarado-Gómez, J. D.; Strassmeier, K. G.; Weber, M.; Carroll, T. A.
Proceedings of the International Astronomical Union, Volume 10, Symposium S305, CUP

Determination of Li abundance in Solar type stars of intermediate brightness, Amazo-Gómez, E. M.; Hernandez-Águila, B.; Chávez, M.; Bertone, E.; de la Luz, V.
XIV Latin American Regional IAU Meeting 2014, RMXAC, Proceeding.

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