Eliana Amazo-Gómez

Curriculum Vitae

"Is the force of the Sun that drives me"

Research Interests

- Sun-like stars
- Magnetic Fields - Chromospheric Activity
- Abundances: Lithium problem
- Exoplanets - Habitability
- Stellar rotation
- Photometry - Spectroscopy - Polarimetry

Education

In progress **PhD Student**, International Max Planck Research School for Solar System Science at the Max Planck Institute for Solar System Research and Fakulät für Physik der Georg-August-Universität Göttingen , Göttingen, Germany.
In progress, estimated time duration: 3.0 - Years

PhD Thesis project

Thesis project title: Understanding brightness variations of Sun-like stars on timescale of stellar rotation

Supervisor: **Dr. Alexander Shapiro**, Researcher Scientist - Head of Solar and Stellar Variability group SOLVe, Max Planck Institute for Solar System Research (MPS)

Supervisor: **Dr. Natalie Krivova**, Researcher Scientist - Leader Minerva Research Group, Max Planck Institute for Solar System Research (MPS)

Supervisor: **Prof. Dr. Ansgar reiners**, Professor of Astrophysics at Georg-August-Universität Göttingen

Description: Brightness variability of Sun-like stars has been associated with different timescale phenomena. SATIRE-S, a model developed at the Max Planck Institute for Solar System Research allows replicating observed variations of solar brightness at all timescales that have until now been resolved. Furthermore, it provides the opportunity to link the observed stellar brightness variations to the properties of the magnetic field. Our understanding of this link is now mature enough to be extended from the Sun to Sun-like stars. In this context, we analyse and compare the activity patterns on light curves of stars observed by the Kepler spacecraft and synthetic ones. In particular, we explored whether power spectra of stellar brightness variations can be used to estimate stellar parameters such as the rotational period and the inclination of rotation axis. Based on this analysis, we present a novel method that allows us to achieve better constrained stellar rotational periods from photometric time series observations on solar analogs. Moreover, our method will allow us to perform a better comparison between the stellar and the solar case.

Justus-von-Liebig-Weg – 3, D-37077 Göttingen, Deutschland
(+49) 176 78818877 • ☎ (+49) 551 384979 - 126 • ✉ amazo@mps.mpg.de

Master of Science (M.Sc.) in Astrophysics

Sep – 2016 **Fakulät für Physik der Ludwig-Maximilians-Universität** , (LMU), München, Germany.
Completed in 1.5 of 2.0 - Years

Thesis title Observational study of convection related phenomena in cool main sequence stars (F - G & K)

Supervisor **Dr. Gaitee Hussain**, Researcher Planets and Star Formation - Stellar Structure and Evolution Group, ESO Faculty

Supervisor **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 **Universidad Nacional de Colombia**, (UNAL), Bogotá, Colombia.
5.0/5.0 - Years

Thesis title Determination of the Geomagnetic Bow Shock position and interaction angle with the Solar Wind using THEMIS Data

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

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

Academic Experience

Trainings, Internships, Summer & Winter Schools

Dec 28 – Jan 08 2016 **33rd Jerusalem Winter School in Theoretical Physics on: "Exoplanets"**, The Israel Institute for Advanced Studies at The Hebrew University of Jerusalem.
Jerusalem – Israel

Sep 28 – Oct 02 2015 **Synthesis and Abundance measurements using MOOG code**, (One week training), Centro de Astrofísica da Universidade do Porto (CAUP).
Porto – Portugal

Sep 9 – Nov 17 2014 **The Leibniz-Graduate School (LGS) for Quantitative Spectroscopy in Astrophysics** , Leibniz Institute for Astrophysics Potsdam (AIP).
Potsdam, Brandenburg – Germany

Jul 21 – Aug 1, 2014 **CISM Space Weather Summer School 2014**, National Center for Atmospheric Research (NCAR), High Altitude Observatory (HAO) & National Science Foundation (NSF).
Boulder, Colorado – USA

Dec 1 – Mar 1 2013-2014 **Winter Research Internship in Stellar Structure and Evolution**, the Max Planck Institute for Astrophysics (MPA).
Garching, Baviera – 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

May – Jun 2013 **Space Weather Summer School 2013** , The University of Alabama in Huntsville – Center for Space Plasma and Aeronomic 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 9 – 11 2010 **Extragalactic Astrophysics School**, Universidad Nacional de Colombia – Observatorio Astronómico Nacional.
Bogotá – Colombia

Papers, Proceedings and Publications

2015 **Paper**, 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, 2015MNRAS.451.4368L

2015 **Proceeding**, 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

2014 **Proceeding**, 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, RMXAC

2014 **Abstract**, Teaching tools useful to understand the Space Weather, through kinematic analysis of some CME., **Amazo-Gomez, E. M.**.
40th COSPAR Scientific Assembly

2014 **Abstract**, Estimation of the Bow Shock location and cuasi-perpendicular magnetospheric angle Θ(B,n), using data from 14 different shock crossing events recorded by THEMIS-C, **Amazo-Gómez, Eliana**; Alvarado-Gómez, Julian David; Calvo Mozo, Benjamín.
40th COSPAR Scientific Assembly

2014 **Abstract**, Determination of the geomagnetic bow shock position and interaction angle with the Solar Wind using THEMIS Data., **Amazo-Gómez, E.**; Alvarado-Gómez, J. D.; Calvo-Mozo, B.; Mozer, F.
21th Young Scientists Conference on Astronomy and Space Physics

2012 **Abstract**, The bow shock (the normal and the IMF Incidence angle: Preliminary Description)., Alvarado Gómez, J. D.; **Amazo-Gómez, E. M.**; Mozer, F.; Calvo-Mozo, B..
American Geophysical Union, Fall Meeting 2012, AGU

Talks, Posters and Meetings

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

Sep 30 – 2015 **Invited Talk**, Porto, Portugal.
The Cookie Seminar series, Instituto de Astrofísica e Ciências do Espaço (IA). 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.

Jul 8 – 2013 **Invited Talk**, Santa Maria de Tonantzintla, México.
Seminar of cycle CyA, Eliana Amazo-Gómez, 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.

Jul 11 – 2017 **Contributed Talk**, Montpellier, France.
BCool 2017. Understanding brightness variations of Sun-like stars on timescale of stellar rotation: A novel method to obtain stellar rotational periods.

Jun 13 – 2017 **Contributed Talk**, Potsdam, Germany.
14th Potsdam Think-shop, Stellar Magnetism: Challenges, Connections, and Prospects. Understanding brightness variations of Sun-like stars on timescale of stellar rotation: A novel method to obtain stellar rotational periods.

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

Oct 3 – 2016 **Contributed Talk**, Cartagena, Colombia.
XV LARIM 2016. Observational study of convection related phenomena in cool main sequence stars (K-G-F).

Jul 5 – 2016 **Contributed Talk**, Athens, Greek.
EWASS meeting 2016: Observational study of convection related phenomena in cool main sequence stars (K-G-F).

Feb 3 – 2015 **Contributed Talk**, Palermo,Italy.
2nd SOLARNET MEETING: 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.

Aug 7 – 2014 **Contributed Talk**, Moscow, Russia.
The 40th COSPAR Scientific Assembly, COMMITTEE ON SPACE RESEARCH (COSMOS-COSPAR 2014), Teaching tools useful to understand the Space Weather, through kinematic analysis of some CME.

Nov 6 – 2012 **Contributed Talk**, Bucaramanga, Colombia.
COCOA, III Colombian Congress of Astrophysics. 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.

Jun 26 – 30 2017 **Poster Presentation**, Prague, Czech Republic.
EWASS 2017. Understanding brightness variations of Sun-like stars on the timescale of stellar rotation

Jun 6 – 10 2016 **Poster Presentation**, Uppsala,Sweden.
CoolStars 19. Observational Analysis of Convection Related Phenomena in Cool Main Sequence Stars (K-G-F)

Oct 5 – 9 2015 **Poster Presentation**, Saint-Michel-l'Observatoire, France.
OHP 2015 : Twenty years of giant exoplanets, Line Profile Variations of Solar Analog Stars: Chromospheric Indexes vs. Li Abundance. The Exoplanets Environment.

Jul 12 – 17 2015 **Poster Presentation**, Bern, Switzerland.
Pathways 2015: Towards Habitable Planets, Line Profile Variations of Solar Analog Stars: Chromospheric Indexes vs. Li Abundance. The Host Star Search - Extending the sample.

Nov 30–Dec 5 2014 **Poster Presentation**, Punta Leona, Costa Rica.
Polarimetry: From the Sun to Stars and Stellar Environments, IAU Symposium 305 ,Chromospheric Index of Solar analogs and a statistical correlation with Li abundance, the host-planet search.

Aug 2 – 10 2014 **Poster Presentation**, Moscow, Russia.
The 40th COSPAR Scientific Assembly, COMMITTEE ON SPACE RESEARCH (COSMOS-COSPAR 2014) ,Estimation of the Bow Shock Location & magnetospheric cuasi-perpendicular Theta-angle(B,n), using data from 14 different events crossings shock recorded by THEMIS-C.

Nov 25 – 30 2013 **Poster Presentation**, Florianópolis, Brazil.
XIV Latin American Regional IAU Meeting (LARIM 2013) ,Determination of Li abundance in Solar type stars, a discussion with the presence of sub-stellar companions

Dec 3 – 7 2012 **Poster Presentation**, San Francisco, USA.
AGU Fall Meeting 2012, E.M. Amazo-Gómez, J.D. Alvarado-Gómez, B. Calvo-Mozo, F. Mozer, The Bow Shock Normal and the IMF Angle of Incidence: Preliminary Description.

Jul 15 – 26 2013 **Attendance**, Santa Maria de Tonantzintla, Puebla – México.
Guillermo Haro 2013 Workshop: Galaxy structure and evolution through Integral Field Spectroscopy: the next generation surveys. Instituto Nacional de Astrofísica, Óptica y Electrónica (INAOE)

Sept 12 – 16 2011 **Attendance**, Bogotá – Colombia.
1st Colombian Workshop on Statistical Mechanics. Universidad de los Andes

Nov 3 – 6 2009 **Attendance**, Bogotá – Colombia.
1st Colombian Workshop on Topics in Physics – Nanotechnology. Universidad Nacional de Colombia

Oct 5 – 9 2009 **Attendance**, Santa Marta, Colombia.
XXIII National Congress of Physics.

Oct 29 – 31 2009 **Attendance**, Bogotá, Colombia.
XV National Congress of Chemistry.

Jun 23 – 27 2009 **Attendance**, *ALOP – UNESCO: Workshop on Optics and Photonics. Universidad Nacional de Colombia*.
Bogotá – Colombia

Jun 3 – 5 2009 **Attendance**, Bogotá – Colombia.
Particle Detectors Seminar: High Energy Physics and Beyond. Universidad Nacional de Colombia

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
Allocated 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: European Organisation for Astronomical Research in the Southern Hemisphere – ESO 3.6m
Instrument: High Accuracy Radial velocity Planet Searcher polarimeter – HARPSpol
Period: P100
Allocated 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
Allocated 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
Allocated time: 40.0 Hours | Top-Ranked proposal

Acquired funding

2015 Financial support to attend 33rd Jerusalem WS in Theoretical Physics on: "Exoplanets" ($850)
2015 Travel support to 'Synthesis and Abundances measures training using MOOG code' ($1000)
2015 Financial support to attend OHP2015 ($500)
2015 Financial support to attend Pathways2015 ($500)
2014 Leibniz-Graduate School (LGS) Scholarship ($4000)
2014 CISM SS2014 Scholarship ($2500)
2013 INAOE Summer Internship 2013 ($800)
2013 CSPAR SS2013 Scholarship ($2000)
2013 Beneficiary Credit Scholarship Program, Colfuturo, Colombia ($36.000)
2013 Beneficiary Foundation for the Promotion of Research and Technology program-FPIT, Travel grant for LARIM 2013 , Bank of the Republic, Colombia ($1.000)

Awards

2014 Beneficiary Credit Scholarship Program, Colfuturo, Colombia
2008 – 2010 Undergraduate Studentship, Universidad Nacional de Colombia, Faculty of Science, Physics Department. Teaching assistant in the course Science Technology and Development.
2010 First Place, "48 Horas para Innovar", Decathlon Project - Kalenji.
2005 Best Score ICFES Test, High School, Colegio Distrital Sorrento, Bogotá Colombia
2003 Academic Honour Mention, High School, Colegio Distrital Sorrento, Bogotá Colombia

Computer skills

PL Programming languages: IDL, Phyton (basic)
AT Astrophysical tools: REDUCE, LSD, MOOG, IRAF, SSWIDL, THEMIS TDAS, Period04, TIPSOD
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

Languages

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

Stays Abroad, Community Service & Voluntary Social Year

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.

2010 **48 hours to innovate**, Bogotá, Colombia.
I leaded a group of students in the international program "48 hours to innovate", which included participants from several countries, trough interaction with engineering, mathematicians and physicists to provide multidisciplinary solutions to specific problems of some companies. Our work, which involved the design, development and merchandising of several implements for a sports branch (Kalenji) was selected as winner from 12 different working groups from different Universities around the world.

2008 – 2010 **Assistantships**, Bogotá, Colombia.
I was student assistantships for the lecture, Science Technology and Development Lecture during two year, where I had the responsibility to organise exercises and student evaluations. I also participated as monitor student during the ALOP (Active Learning in Optics and Photonics), were I was the responsible for organise the didactic material.

2009 – 2011 **Guardian of bike-path**, Bogotá, Colombia.
I got selected as a Guardian of the Bike path, which is a healthy recreation program that exists in my city, Bogotá. To do this work was necessary to have bike manober skills, and Emergency Medical Technician (EMT-B) knowledge. I was awarded with the honorary guardian mention during my first month in the program.

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). The aim of the team was develop projects of science and physics promotion for groups of young high school and college students. We developed a project in conjunction with the Bogotá City Hall to promote Astronomy in children between 7 and 10 years old. The different projects were presented during the National Technology and Science Meeting (Expociencia Expotecnología 2011).

2000 – 2003 **ACAC**, Bogotá, Colombia.
My first community experience goes back to my High School time were I was selected as the school representative for academic events organised by the education secretary of Bogotá such as: Lead the 3 first ecologic campaigns at the surroundings of the school and be the school representative for the Colombian Association for the Advance of Science (ACAC). I had the opportunity to lead the project "Hidden Planet" at the National Technology and Science Fair (Expociencia Expotecnología 2003), where I had my first science approach with the Astronomy.

External Interests

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

References

Dr. Alexander Shapiro **Researcher Scientist - Head of Solar and Stellar Variability group SOLVe**, *Max Planck Institute for Solar System Research (MPS)*, D-37077 Göttingen, Deutschland.
shapiroa@mps.mpg.de

Dr. Natalie Krivova **Researcher Scientist - Leader Minerva Research Group**, *Max Planck Institute for Solar System Research (MPS)*, D-37077 Göttingen, Deutschland.
krivova@mps.mpg.de

Prof. Dr. Thomas Preibisch **Leader of the Young Stars and Star Formation Group, Professor for Astrophysics**, *Universitäts-Sternwarte München (USM), Ludwig-Maximilians-Universität (LMU)*, 81679 München, Germany.
preibisch@usm.uni-muenchen.de

Dr. Gaitee Hussain **Researcher Planets and Star Formation - Stellar Structure and Evolution Group, ESO Faculty**, *European Southern Observatory (ESO)*, D-85748 Garching bei MÃijnchen, Germany.
ghussain@eso.org

Prof. Dr. Klaus G. Strassmeier **Director Research Branch:Cosmic Magnetic Fields, Professor for Astrophysics at Univ. Potsdam**, *Leibniz-Institut für Astrophysik Potsdam (AIP)*, 14482 Potsdam, Germany.
kstrassmeier@aip.de

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

Dr. Miguel Chavez Dagostino **Scientific Director of the Large Millimeter Telescope (LMT-INAOE)**, *Instituto Nacional de Astrofísica Óptica y Electrónica*, Puebla, México.
mchavez@inaoep.mx