



B.Sc. Juan Sebastián Castellanos-Durán

Curriculum Vitae

Profile

As a young researcher interested in astrophysics and its applications, especially in those related to solar physics, I have acquired excellent physics concepts and tools, such as, data analysis, computer programming, experimental techniques, and a logical-mathematical way of thinking. In addition, I have developed linguistic (English, German), observational (telescopes) skills and data analysis (IDL-SSW). All of those tools and skills are essential to do research in the fields of astronomy and solar physics. Therefore, the devotion to the research, responsibility, creativity, autonomy to develop research projects and team work are a priority for me.

Education

Ago 2014 - **Graduate student - Master of Science in Astronomy**

Observatorio Astronómico Nacional

Universidad Nacional de Colombia

Bogotá - Colombia

2008 - 2013 **Bachelor of Science in Physics**

Five years program - Graduation April 23, 2014

Universidad Nacional de Colombia

Bogotá - Colombia

G.P.A. 4.1/5.0

Senior thesis ***Study of the excess in White-Light during Solar Flares via the Backwarming model***

Supervisor Benjamín Calvo-Mozo

Observatorio Astronómico Nacional - Universidad Nacional de Colombia

Bogotá - Colombia

Cll 26 N° 40-77 Edificio Junio APTO 201 - 111321 - Bogotá D.C. Colombia

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External Juan Carlos Martínez Oliveros

advisor Space Sciences Laboratory - University of California, Berkeley
Berkeley - CA, U.S.A.

Abstract We studied 43 White-light flares (WLF) using the satellite data from the Solar Dynamic Observatory concluding that the applied methods on the study of these processes generate artefacts which produce flux overestimation during WLFs. At this point, we proposed a new method which achieves considerable progress respect to classical methods. In addition, we analysed the WLFs writing a radiative transfer code to simulate the H^- ion emission and the opacities of H, Si, C concluding that the Backwarming model is able to heat the lower solar atmosphere to produce the white-light emission.

Academic Experience: Schools, Workshops and Seminars

May 18 - 23 **Participant**, 3rd SOLARNET School: "Solar Magnetic Fields: Modeling and Measuring Techniques"

2015 Instituto de Astrofísica de Andalucía (IAA-CSIC)
Granada, España

Dec 8 - 12 **Participant**, Primera Escuela Andina de Astronomía y Astrofísica: Visión Moderna de la Cosmología (EAAA).

2014 Escuela Politécnica Nacional
Quito, Ecuador

Aug 25-Sep 5 **Participant & LOC**, Guillermo Haro 2014: Advanced School on Integral Field Spectroscopy Techniques and Analysis.

2014 Instituto Nacional de Astrofísica, Óptica y Electrónica - INAOE
Puebla, Mexico

Jun - Aug **Summer Internship in Astrophysics and Astronomical Instrumentation at INAOE**

2014 Instituto Nacional de Astrofísica, Óptica y Electrónica - INAOE
Puebla, Mexico

2014 **Book - Editor's assistant**, Astronomía para todos. Retos modernos de una ciencia milenaria.
Editor Benjamín Calvo-Mozo - 19 Authors. **ISBN 978-958-761-656-9**
Observatorio Astronomico Nacional - Universidad Nacional de Colombia

Jun - Aug **The 2013 IRIS Student Summer Intern Research Program**

2013 Stanford University and Lockheed Martin Solar and Astrophysics Laboratory
Palo Alto - CA, U.S.A.

Jun - Jul **International Summer School – Solar Astrophysics: Modern Trends and Techniques**

2012 Observatorio Astronomico Nacional - Universidad Nacional de Colombia
Bogotá, Colombia

- May 28 - 1 **Fourth School in Physical Mathematics: Quantum Integrable Systems**
 2012 Universidad de los Andes
 Bogotá, Colombia
- Sept 12 - 16 **First Workshop on Statistical Physics**
 2011 Universidad de los Andes and Universidad Nacional de Colombia
 Bogotá, Colombia
- Aug 9 - 11 **Extragalactic Astronomy School**
 2010 Observatorio Astronomico Nacional - Universidad Nacional de Colombia
 Bogotá, Colombia
- 2012 -2013 **Graduate Courses attended:** Astrophysics, Observational techniques in astronomy, Stellar structure, Select Topics in astronomy teaching.
 Observatorio Astronomico Nacional - Universidad Nacional de Colombia
 Bogotá, Colombia

Conferences, Presentations, Posters & Proceedings

- May 25-28 **Contributed Talk**, Vector magnetic field changes during flares using SDO/HMI data.
 2015 J.S. Castellanos-Durán, L. Kleint & B. Calvo-Mozo.
 3rd SOLARNET Workshop: "Polarization in the Sun, the Solar System, and Beyond"
 Granada, España
- Dec 1 - 5 **Contributed Talk and proceedings**, El modelo del Backwarming y un nuevo método
 2014 observacional para entender los flares que emiten luz blanca
 J.S. Castellanos-Durán, & B. Calvo-Mozo.
 IV Congreso Colombiano de Astronomía y Astrofísica (COCOA 2014) - Universidad de Nariño
 March, 2015. Vol 6 No. 1-2 FACIEN. ISBN 2256-3830
 Pasto, Colombia.
- Dec 1 - 5 **Contributed Talk and proceedings**, Cambios tipo Heaviside durante flares: Análisis de la
 2014 componete en la línea de la visual y el vector campo magnético
 J.S. Castellanos-Durán, L. Kleint & B. Calvo-Mozo.
 IV Congreso Colombiano de Astronomía y Astrofísica (COCOA 2014) - Universidad de Nariño
 March, 2015. Vol 6 No. 1-2 FACIEN. ISBN 2256-3830
 Pasto, Colombia.
- Dec 1 - 5 **Contributed Talk and proceedings**, ¿Qué sabemos de las galaxias?: comparación de
 2014 propiedades integradas vs. espacialmente resueltas usando espectroscopía de campo integral
 J.S. Castellanos-Durán, & F.F. Rosales-Ortega
 IV Congreso Colombiano de Astronomía y Astrofísica (COCOA 2014) - Universidad de Nariño
 March, 2015. Vol 6 No. 1-2 FACIEN. ISBN 2256-3830
 Pasto, Colombia.

- Jun 9 - 13 **Poster**, White-Light Flares: A proposed improvement to known classic reduction methods.
 2014 J. S. Castellanos-Durán, J.D. Alvarado-Gomez, W. G. Fajardo-Mendieta & B. Calvo-Mozo
 Cambridge Workshop on Cool Stars, Stellar Systems, and the Sun “Cool Stars 18”
 Flagstaff - AZ, U.S.A.
- Aug 30 **Poster**, Cluster analysis for two solar physics problems: Stokes parameters & NUV spectra.
 2013 J. S. Castellanos-Durán & L. Kleint.
 The 2013 IRIS Student Summer Intern Research Program - Stanford University and Lockheed Martin Solar and Astrophysics Laboratory
 Palo Alto - CA, U.S.A.
- Nov 27 - 2 **Contributed Talk**, Characterization of white light, SXR and HXR kernels emissions in white
 2012 light flares observed by SDO/HMI and RHESSI.
 J.S. Castellanos-Durán, J.D. Alvarado-Gomez & B. Calvo-Mozo.
 12th RHESSI Workshop: Solar in Sonoma. Tracing the Connections in Solar Eruptive Events.
 University of California, Berkeley - NASA.
 Petaluma - CA, U.S.A.
- Dec 3 - 7 **Poster**, Characterization of white light, SXR and HXR kernels emissions in white light flares
 2012 observed by SDO/HMI and RHESSI.
 J.S. Castellanos-Durán, J.D. Alvarado Gomez, J.C. Martinez Oliveros, J.C. Buitrago-casas,
 Benjamin Calvo-Mozo.
 American Geophysical Union - AGU Fall Meeting.
 San Francisco - CA, U.S.A.
- July 2012 **Poster**, Study of the white light and hard X-rays emission of the M6.6 class flare of February
 18 2011 using SDO/HMI and RHESSI.
 J. S. Castellanos-Durán, J. D. Alvarado-Gómez, J.C. Martínez Oliveros &
 B. Calvo-Mozo.
 International Summer School in Solar Astrophysics: Modern Trends and Techniques - Univer-
 sidad Nacional de Colombia.
 Bogotá, Colombia.
- Aug 29 - 31 **Contributed Talk and proceedings**, Caracterización de la emisión en luz blanca y en rayos-X
 2012 de la fulguración GOES M6.6 del 18 de Febrero de 2011 usando SDO y RHESSI.
 J.S. Castellanos-Durán, J.D. Alvarado-Gomez & B. Calvo-Mozo.
 Encuentro Nacional de investigación y desarrollo National *ENID 2012* - Universidad Nacional
 de Colombia.
 ISBN 978-958-761-308-7
 Bogotá, Colombia.

Dec 5 - 9 **Poster**, Observational Analysis of Photospheric Magnetic Field Restructuring During Energetic
2011 Solar Flares.

J.D. Alvarado, J.S. Castellanos, J.C. Buitrago, J.C. Martínez, C.Lindsey,
W.P. Abbett & G.H. Fisher.

American Geophysical Union - AGU Fall Meeting 2012.

San Francisco - CA, U.S.A.

Aug 3 - 6 **Attended**, II Congreso Colombiano de Astronomía y Astrofísica (COCOA 2010)

2010 Observatorio Astronomico Nacional - Universidad Nacional de Colombia.

Bogotá, Colombia.

Languages

Spanish **Mother tongue**

English **C1**

Perfect reading, listening and conversationally fluent

German **A2**

Learning

Computer skills

Basic Operative systems (Linux, Mac OS, Windows)

Intermediate \LaTeX , Beamer, OpenOffice, Office.

Advanced IDL, SSWIDL, IRAF, Mathematica.

Miscellaneous

2010-Present **Member**, Group of Solar Astrophysics (GoSA)

Observatorio Astronomico Nacional - Universidad Nacional de Colombia

Bogotá, Colombia

2012 - 2013 **Student assistantship** at Observatorio Astronomico Nacional

Universidad Nacional de Colombia

Bogotá, Colombia

Oct 11 - 17 **Participant**, XII National Festival of university theater. ASCUN CULTURA.

Universidad Autonoma del Caribe

Barranquilla, Colombia.

2009 - 2010 **Member**, Experimental theater group of National University.

Universidad Nacional de Colombia

Bogotá, Colombia

Jan 29 - 06 **Participant**, Second World Meeting of Youth Theater EMTIJ Chile.

2007 Universidad de Artes y Ciencias Sociales ARCIS.

Santiago de Chile, Chile.

2000 - 2007 **Member**, AMSA Theater group.

Bogotá, Colombia

References

Benjamín Associate Professor, Observatorio Astronómico Nacional (OAN).

Calvo-Mozo Universidad Nacional de Colombia, Bogotá - Colombia.
bcalvom@unal.edu.co

Fabián Tenure track Researcher, Instituto Nacional de Astrofísica Óptica y Electrónica

Rosales Puebla, Mexico

Ortega frosales@inaoep.mx

Julian David Ph.D. Student, European Southern Observatory (ESO).

Alvarado Munich, Germany

Gómez jalvarad@eso.org