

Andrés A. Plazas Malagón, PhD (he/él)

CONTACT INFORMATION

Rubin Operations Scientist, Kavli Institute for Particle Astrophysics and Cosmology / SLAC National Accelerator Laboratory

Software Scientist, Data Release Production, Vera C. Rubin Observatory

Community Engagement Scientist, Community Engagement Team, Vera C. Rubin Observatory

Visiting Scientist, Department of Physics, Washington University in St. Louis

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RESEARCH INTERESTS

Cosmology, Dark Energy, Dark Matter, Gravitational Lensing, Observational Methods and Instrumentation in Astronomy, Simulations, Software Developing and Testing in Astronomy, Data Analysis, Large Scale Structure, Education and Public Outreach.

EDUCATION

University of Pennsylvania, Philadelphia, Pennsylvania, USA

Ph.D., Physics and Astronomy, December 2012

- Thesis Title: *Weak Gravitational Lensing Systematic Errors in the Dark Energy Survey.*
- Advisor: Professor Gary M. Bernstein

M.S., Physics and Astronomy, December 2009

Universidad de Los Andes, Bogotá D. C., Colombia

B.S., Physics, May 2007

- Thesis Title: *Estimation of the Galaxy Cluster Correlation Function in the Sloan Digital Sky Survey and perspectives for the Dark Energy Survey.*
- Advisor:
Professor Juan Pablo Negret

RESEARCH EXPERIENCE AND AFFILIATIONS

Builder of Vera C. Rubin Observatory Legacy Survey of Space and Time (LSST)

Builder (with Data Rights) of the Dark Energy Survey (DES) Collaboration

Full Member of Rubin Observatory Legacy Survey of Space and Time Dark Energy Science Collaboration (DESC)

Member of NASA Nancy Grace Roman Space Telescope Detector group and part of the Roman Science Investigation Team “Cosmology with the High Latitude Survey”

Member of Hyper Suprime-Cam Survey

Member of the International Astronomical Union (Divisions B, C, and J)

Member of the American Astronomical Society

Member of the American Physical Society

Rubin Operations Scientist October 2022 – Present
Kavli Institute for Particle Astrophysics and Cosmology
SLAC National Accelerator Laboratory

Software Scientist November 2018 – Present
Data Management,
Vera C. Rubin Observatory

Community Engagement Scientist October 2022 – Present
Community Engagement Team,
Vera C. Rubin Observatory

Associate Research Scholar November 2018 – October 2022
Department of Astrophysical Sciences,
Princeton University

Visiting Scientist April 2019– present
Department of Physics,
Washington University in St. Louis

Research Scientist May 2018 – December 2018
Cosmoquest,
Astronomical Society of the Pacific

Caltech Postdoctoral Scholar April 2015 – April 2018
Astrophysics and Space Sciences Section,
NASA's Jet Propulsion Laboratory, Caltech

Research Associate October 2012 – February 2015
Department of Physics,
Brookhaven National Laboratory

Research Assistant September 2010 – October 2012
Department of Physics and Astronomy,
University of Pennsylvania

Observer (January 2017, October 2016, February 2015, September 2014, September 2013, November 2009, February 2017, October 2018)

Mt. Palomar Observatory (200-inch telescope, Double Spectrograph (DBSP)), Palomar Mountain, California, USA

W. M. Keck Observatories HQ (Keck 10m-Telescopes 1 and 2: LRIS, DEIMOS), Waimea, Hawaii, USA

Blanco 4m-Telescope (DECam), Cerro Tololo Inter-American Observatory, La Serena, Chile

Mayall 4m-Telescope (MOSAIC), Kitt Peak National Observatory, Tucson, Arizona

Visiting Scientist Summer 2006, Summer 2007, Summer 2008

Fermi National Accelerator Laboratory, Fermilab, Batavia, Illinois (DECam CCDs characterization).

HONORS AND
AWARDS

Universities Research Association Visiting Scholar Grant

Title: *Characterizing Skipper CCDs for Cosmological Applications*, PI, US\$8,000

Provide funding to visit Fermilab to collaborate with Fermilab's Skipper CCD group.

The LSST Corporation Enabling Science Program 2020

Title: *Supporting Interactions between the LSST DESC, Rubin Observatory & LSST Science Collaborations with a Focus on Early Career Scientists*, co-PI, US\$12,100

Support early career scientists and key contributors to attend two meetings in 2021 and a workshop regarding image simulation and processing, and observing strategies.

The LSST Corporation Enabling Science Program 2020

Title: *Workshop on Systemic Racism and its Relation to Equity, Diversity, and Inclusion during the 2021 Rubin PCW*, PI, US\$6000

Host an interactive workshop on the topic of systemic racism and its relation to Equity, Diversity, and Inclusion during the 2021 Rubin Project and Community Workshop (PCW).

The LSST Corporation Enabling Science Program 2020

Title: *Image Sensors for Precision Astronomy 2020/2021 Workshop*, PI, US\$8000

Support the participation of eight junior scientists (postdocs and/or students) in a two-day face-to-face meeting in instrumentation to share results and findings.

Fundación Alejandro Ángel Escobar National Prize, Colombia

First Place in the Category of Exact, Physical, and Natural Sciences for the work *Understanding of systematic errors for the use of weak gravitational lensing as a*

cosmological tool (US\$10000), 2016.

Considered as the “highest scientific recognition in Colombia.”

NEXTProf Workshop, University of Michigan, Selected Participant, 2021

Series of events in a nationwide effort to strengthen and diversify the next generation of academic leaders.

PI LaunchPad Workshop, NASA Science Mission Directorate (SMD), the Heising-Simons Foundation, and the University of Arizona, Selected Participant, 2021

Workshop to develop a researcher’s first flight mission proposal.

Vera C. Rubin Observatory Builder Status, 2020.

Dark Energy Survey Builder Status, 2014.

LSST Dark Energy Science Collaboration Full Member, 2014.

University of Pennsylvania

Zaccheus Daniel Foundation for Astronomical Science Award (US\$7100), 2010.

Universidad de Los Andes

Summer internship at Fermi National Accelerator Laboratory (US\$2840), Fermilab, 2006.

ALLEX/WUSTL Intensive Chinese and Japanese Language Program, 2019 (Declined)

Scholarship from Washington University in St. Louis (WUSTL) for the study of the Japanese language in the form of tuition remission for US\$1920, 2019

Colegio Salesiano de León XIII

Best ICFES (Colombian Government nationwide examination upon completion of high school) at Colegio Salesiano de León XIII, Bogotá, Colombia, 2000.

TALKS GIVEN AS
INVITED SPEAKER

The Vera C. Rubin Observatory, Chilean embassy in Japan / Astronomical Society of Japan / Astronomical Society of Chile, (October 2022)

The Vera C. Rubin Observatory, Strange Loop Conference, St. Louis (September 2022)

Systematic Errors in Weak lensing and DES Y3 results, Department of Physics, Seminar, Cornell University, (April 2022)

The Vera C. Rubin Observatory Legacy Survey of Space and Time: Exploring the Universe with the Largest Digital Camera in the world, Science in St. Louis Series at St. Louis County Library (online), (January 2021)

El Observatorio Vera C. Rubin, Grupo de Astronomía “Cuásar”, Facultad de Ciencias, Universidad Central de Venezuela (online and in Spanish), (November 19, 2020)

Dark Energy Survey Y3 results, NYU Department of Physics Astrophysics and Relativity Seminar (online), (November 17, 2020)

The Wide Field infrared Survey Telescope: Dark Energy, Exoplanets, and Space Exploration, St. Louis Space Frontier, Venture Café, (March 2020)

The mystery of Dark Energy and the Expanding Universe, St. Louis Space Frontier, Venture Café, (May 2019)

Gravitational Lensing and the Dark Side of the Universe, St. Louis Astronomical Society, (May 2019)

Dark Energy and Our Expanding Universe, St. Louis County library, Daniel Boone Branch (August, 2019)

Workshop on Statistical Methods in Cosmology, UNAM, Mexico, Invited Speaker (August 2018)

Systematic Errors in Weak Gravitational Lensing for Cosmological Investigations, Physics Department, Washington University in St. Louis (September 28, 2017)

Systematic Errors in Gravitational Lensing, JPL Postdoc Seminar Series, Jet Propulsion Laboratory (July 20, 2017)

Precision Astronomy with fully Depleted CCDs, Brookhaven National Laboratory, Upton, NY, USA. Invited speaker. Title of talk: “*Measurements of nonlinearity and pixel shifting effects in a H2RG detector*” (December 2016)

Andean Cosmology School 2015 (sponsored by the Office of Astronomy for Development of the IAU), Universidad de Los Andes, Bogotá, Colombia. Invited instructor to give 4 lectures on weak gravitational lensing and astronomical instrumentation and detectors (July 2015)

Precision Astronomy with fully Depleted CCDs , Brookhaven National Laboratory, Upton, NY, USA. Invited speaker. Title of talk: “*Transverse electric field effects in the Dark Energy Camera devices*” (November 2013)

SERVICE

National Science Foundation (NSF) Astronomy and Astrophysics Research Grants reviewer.

Member of ad-hoc Committee for Equity, Diversity, and Inclusion in Recruitment, Department of Astrophysical Sciences, Princeton University (October 2020 - January 2021)

Member of the TEAM-UP implementation workshop team of the Department of Astrophysical Sciences, Princeton University (January 2021 - Present)

Co-organizer of the Rubin LSST DESC special session at the 237th virtual American Astronomical Society meeting (January, 2021).

Master thesis jury: “Efecto de lente gravitacional unificado: una aproximación a la reconstrucción del perfil de masa de un cúmulo galáctico“, Daniel Torres, Observatorio Astronómico Nacional, Universidad Nacional de Colombia (2020)

Delegate for the Early Career Focus Session for the Decadal Survey in Astronomy and Astrophysics, Astro 2020 (October 8-9, 2018), National Academy of Sciences, Washington DC, USA

Delegate of the International Astronomical Union: Member of Division B (Facilities, Technologies and Data Science), of Division C (Education, Outreach and Heritage), and of Division J (Galaxies and Cosmology)

Penn Alumni Interview Program: program dedicated to offering an interview to every undergraduate applicant to the University of Pennsylvania.

Referee for the Monthly Notices of the Royal Astronomical Society (MNRAS)

Referee for the Publications of the Astronomical Society of the Pacific (PASP).

Referee for the Journal of Instrumentation (JINST).

Dark Energy Survey internal reviewer.

Rubin Observatory LSST Dark Energy Science Collaboration internal reviewer.

Rubin Observatory internal reviewer.

Dark Energy Survey Equity, Diversity and Inclusion committee member.

Rubin Observatory LSST Dark Energy Science Collaboration (DESC) liaison to LSST Education and Public Outreach subsystem.

Rubin Observatory LSST Dark Energy Science Collaboration (DESC) Meetings Committee chair.

Rubin Observatory LSST Dark Energy Science Collaboration (DESC) member of the Membership Committee.

Member of the Scientific organizing committee of the first *Latin American Conference on Astrophysics and Relativity*, to take place in Bogotá, Colombia, July 2021.

Member of organizing committee of the *RECA Internships 2021* program (2021), “Red Estudiantes Colombianos de Astronomía” (RECA).

EDUCATION,
PUBLIC
OUTREACH, AND
MENTORSHIP

Proposer and co-organizer of the first Astronomy Festival in St. Louis, MO, USA.
Tower Grove Park, September 10, 2022

Creator and host of the astronomy podcast in Spanish “Visión Cósmica”.

Mentor in “Mentors Program” of “Red Estudiantes Colombianos de Astronomía” (RECA) (Sep 2020 - Present); mentorship of undergraduate physics students in Colombia.

NASA-JPL Solar System Ambassador volunteer for St. Louis, MO area (2019-Present)

Founder and organizer of the “Astronomy on Tap” satellite location in Trenton, NJ, USA (2019)

Main instructor of “Clubes de Ciencia - Colombia”. One-week cosmology school for under-served high school students from Bogotá, Colombia.

Founder and organizer of the “Astronomy on Tap” satellite location in St. Louis, MO, USA (2018)

Co-founder and co-organizer of “Science Distilled” in St. Louis, an event inspired by “Astronomy on Tap” St. Louis (2018)

Participant in “Skype a Scientist” program: scientists will Skype into a classroom for a 30-60 minute Q and A sessions (2019)

Participant in “Letter to Pre-scientists”: program to demystify science careers by creating personal connections between students from high-poverty schools and real scientists (2018-2019)

Volunteer of the International Astronomical Union translation network (translating material from the IAU into Spanish, 2018)

Caltech Astronomy outreach programs: volunteer for “Observing Nights”, “Astronomy on Tap in Pasadena”, and “Pasadena: City of Astronomy” events (2016, 2017).

Supervision and mentorship of international (Colombia) undergraduate student at Caltech under Caltech’s Summer Undergraduate Research Fellowship program (with the support of Dr. J. Rhodes, Dr. R. Smith, and Dr. C. Shapiro, and Universidad de los Andes, 2017).

Proposer of an initiative to bring and supervise and mentor the first international (Colombia) undergraduate student at JPL under Caltech’s Summer Undergraduate Research Fellowship program (with the support of Dr. J. Rhodes and Universidad de los Andes, 2016).

Volunteer at “JPL Open House” and “A Ticket to Explore JPL” events (2016, 2017).

Supervised and mentored undergraduate student from Stanford University at JPL for Caltech’s Summer Undergraduate Research Fellowship program (with the support of Dr. J. Rhodes, 2015).

Publication: Bradley Emi, Andrés Alejandro Plazas Malagón, Jason Rhodes. *Expanding the Chromatic Range of Galaxies for Weak Gravitational Lensing Simulation*, Stanford Undergraduate Research Journal, 2016.

Community Science Event at Caltech (March 2015).

Plazas, A.A. *Descubrimiento del sistema planetario en la estrella TRAPPIST-1*, Revista Hipótesis, Faculty of Sciences, Universidad de Los Andes, Bogotá, Colombia (November 2018). Article about the planetary system in TRAPPIST-1, in Spanish.

Plazas, A.A. *Lentes gravitacionales: la herramienta cósmica de Einstein*, Revista Hipótesis, Faculty of Sciences, Universidad de Los Andes, Bogotá, Colombia (November 2014). Article on gravitational lensing, in Spanish.

Member of the DES Education and Outreach Working Group.

Member of the Education and Public Outreach group of the Department of Physics at Washington University in St. Louis. (2019-Present)

Co-founder of the *Asociación Colombiana de Estudiantes de Física* (Colombian Association of Physics Students). (2004)

SKILLS

Computer Programming:

Python, C, C++, Fortran 90, IDL, UNIX, Mathematica.

Operating Systems:

Apple OS X, Linux, Microsoft Windows family.

Languages:

Spanish (Native)

English (Excellent/Fluent): *iBT* Test of English as a Foreign Language (TOEFL), 101/120; more than 12 years of experience in the USA.

French (Advanced): Diplôme d'Études en Langue Française (DELF), Attestation de Réussite: B1 & B2. "Alliance Française" of Bogotá (Colombia), Pasadena (CA, USA), and St. Louis (MO, USA).

Japanese (basic): Japanese Language Proficiency Test (JLPT) certificate, N4 Level Test approved. "Instituto Nichisei Gakuin", Bogotá; University of Pennsylvania, Philadelphia (private lessons); The Japan Foundation, Los Angeles; St. Louis Japanese Language School

Russian (basic): Russian-American School in St. Louis (MO, USA)

Certifications:

Private Pilot License, Airplane Single Engine Land (2018)

REFERENCES AVAILABLE TO CONTACT

Prof. Massimo Meneghetti
University of Bologna/INAF
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Dr. Pamela Gay
Planetary Science Institute
plg@psi.edu

Dr. Jason Rhodes
NASA Jet Propulsion Laboratory
(818) 354-3304, jason.d.rhodes@jpl.nasa.gov

Dr. Roger Smith
Caltech Optical Observatories, California Institute of Technology
(626) 395-8780, rsmith@astro.caltech.edu

Prof. Gary M. Bernstein
University of Pennsylvania
(215) 573-5262, garyb@physics.upenn.edu

Dr. Juan Estrada
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Dr. Michael Jarvis
University of Pennsylvania
(484) 574-4058, michael@jarvis.net