

# Dr. Néstor Espinoza

Bernoulli & IAU-Gruber Fellow  
Max-Planck-Institut für Astronomie  
Königstuhl 17, 69117, Heidelberg, Germany

E-mail: [espinoza@mpia.de](mailto:espinoza@mpia.de)  
Phone: +49 (0) 6221 528-418  
[www.nestor-espinoza.com](http://www.nestor-espinoza.com)

---

## Education

- Pontificia Universidad Católica de Chile (PUC)** 2012 — 2017  
Ph. D. in Astrophysics (*summa cum laude*)  
Advisor: Dr. Andrés Jordán
- Pontificia Universidad Católica de Chile (PUC)** 2007 — 2012  
Licenciate in Astronomy (*summa cum laude*)  
Advisor: Dr. Andrés Jordán

## Fellowships & Awards

- IAU-Gruber Fellowship** 2018 — present  
Fellowship awarded by The Gruber Foundation, selected by the International Astronomical Union (IAU, 25,000 USD prize for research).
- Bernoulli Fellowship** 2017—present  
Joint position between the Max-Planck-Institut für Astronomie (MPIA) and the University of Bern.
- 100 Young Chilean Leaders** 2017  
Selected as one of the 100 leaders under 35 by El Mercurio newspaper.
- Strittmatter Fellowship** 2017 (Declined)  
University of Arizona.
- Adelina Gutiérrez Travel Grant** 2017  
Research stipend awarded by the Chilean Astronomical Society.
- PUC Young Student Leader** 2016  
Yearly recognition given to 20 students from the university.
- Kavli Summer Program in Astrophysics Fellowship** 2016  
Granted to 17 PhD students around the world.
- People's Choice Award** 2014  
Awarded at the Three Minute Thesis® Competition at PUC.
- Distinguished Graduate Student Award** 2014  
Yearly award granted by the Chilean Astronomical Society.
- CONICYT Graduate Research Fellowship** 2013—2017  
Fellowship awarded by the Chilean Ministry of Education.

# Publication List

## First and second author:

1. **Espinoza**: *Efficient Joint Sampling of Impact Parameters and Transit Depths in Transiting Exoplanet Light Curves*, Research Notes of the American Astronomical Society, vol. 2, 4, 209.
2. **Espinoza**, Rackham, Jordán, et al.: *ACCESS: A featureless optical transmission spectrum for WASP-19b from Magellan/IMACS*, Monthly Notices of the Royal Astronomical Society (2019), vol. 482, 2.
3. Jordán & **Espinoza**: *An Alternative Derivation of the Analytic Expression of Transmission Spectra*, Research Notes of the American Astronomical Society (2018), vol. 2, 149.
4. Brahm, **Espinoza**, Jordán, et al.: *K2-232 b: a transiting warm Saturn on an eccentric  $P = 11.2$  d orbit around a  $V = 9.9$  star*, Monthly Notices of the Royal Astronomical Society (2018), vol. 477, 2572.
5. **Espinoza**, Fortney, Miguel, et al.: *Metal enrichment leads to low atmospheric C/O ratios in transiting giant exoplanets*, Astrophysical Journal Letters (2017), vol. 838, L9.
6. Rackham, **Espinoza**, Apai, et al.: *ACCESS I: An Optical Transmission Spectrum of GJ 1214b Reveals a Heterogeneous Stellar Photosphere*, The Astrophysical Journal (2017), vol. 834, 151.
7. **Espinoza**, Rabus, Brahm, et al.: *EPIC 220504338b: A dense hot-Jupiter transiting a solar analogue*, Monthly Notices of the Royal Astronomical Society (2017), vol. 471, 4374.
8. **Espinoza**, Brahm, Jordán et al.: *Discovery and Validation of a High-Density sub-Neptune from the K2 Mission*, The Astrophysical Journal (2016), vol. 830, 43.
9. **Espinoza**, Bayliss, Hartman et al.: *HATS-25b through HATS-30b: A Half-dozen New Inflated Transiting Hot Jupiters from the HATSouth Survey*, The Astronomical Journal (2016), vol. 152, 108.
10. **Espinoza** & Jordán: *Limb darkening and exoplanets - II. Choosing the best law for optimal retrieval of transit parameters*, Monthly Notices of the Royal Astronomical Society (2016), vol. 457, 3573.
11. **Espinoza** & Jordán: *Limb darkening and exoplanets: testing stellar model atmospheres and identifying biases in transit parameters*, Monthly Notices of the Royal Astronomical Society (2015), vol. 450, 1879.
12. Jordán, **Espinoza**, Rabus et al.: *A Ground-based Optical Transmission Spectrum of WASP-6b*, The Astrophysical Journal (2013), vol. 778, 184.

## Co-authored:

1. Rabus, Lachaume, Jordán et al. (including **Espinoza**): *A discontinuity in the  $T_{\text{eff}}$ -radius relation of M-dwarfs*, Monthly Notices of the Royal Astronomical Society (2019), vol. 484, 2, 2674.
2. Bixel, Rackham, Apai et al. (including **Espinoza**): *ACCESS: Ground-based Optical Transmission Spectroscopy of the Hot Jupiter WASP-4b*, The Astronomical Journal (2019), vol. 157, 2, 68.

3. Mallonn, von Essen, Herrero et al. (including **Espinoza**): *Ephemeris refinement of 21 hot Jupiter exoplanets with high timing uncertainties*, *Astronomy & Astrophysics* (2019), vol. 622, A81.
4. Helminiak, Tokovinin, Niemczura et al. (including **Espinoza**): *Orbital and physical parameters of eclipsing binaries from the All-Sky Automated Survey catalogue. X. Three high-contrast systems with secondaries detected with IR spectroscopy*, *Astronomy & Astrophysics* (2019), vol. 622, A114.
5. Zhou, Bakos, Bayliss et al. (including **Espinoza**): *HATS-70b: A 13 M<sub>J</sub> Brown Dwarf Transiting an A Star*, *The Astronomical Journal* (2019), vol. 157, 1, 31.
6. Jordán, Brahm, **Espinoza** et al. : *K2-287 b: An Eccentric Warm Saturn Transiting a G-dwarf*, *The Astronomical Journal* (2019), vol. 157, 3, 100.
7. Colón, Zhou, Shporer et al. (including **Espinoza**): *A Large Ground-Based Observing Campaign of the Disintegrating Planet K2-22b*, *The Astronomical Journal* (2018), in press.
8. Bean, Stevenson, Batalha et al. (including **Espinoza**): *The Transiting Exoplanet Community Early Release Science Program for JWST*, *Publications of the Astronomical Society of the Pacific* (2018), vol. 130, 114402.
9. Soto, Díaz, Jenkins et al. (including **Espinoza**): *K2-237 b and K2-238 b: discovery and characterization of two new transiting hot Jupiters from K2*, *Monthly Notices of the Royal Astronomical Society* (2018), vol. 478, 5356.
10. Vanzi, Zapata, Flores et al. (including **Espinoza**): *Precision stellar radial velocity measurements with FIDEOS at the ESO 1-m telescope of La Silla*, *Monthly Notices of the Royal Astronomical Society* (2018), vol. 477, 5041.
11. Bento, Hartman, Bakos et al. (including **Espinoza**): *HATS-39b, HATS-40b, HATS-41b, and HATS-42b: three inflated hot Jupiters and a super-Jupiter transiting F stars*, *Monthly Notices of the Royal Astronomical Society* (2018), vol. 477, 3406.
12. Jones, Brahm, **Espinoza** et al.: *A hot Saturn on an eccentric orbit around the giant star EPIC228754001*, *Astronomy & Astrophysics* (2018), vol. 613, A76.
13. Giles, Bayliss, **Espinoza** et al.: *K2-140b - an eccentric 6.57 d transiting hot Jupiter in Virgo*, *Monthly Notices of the Royal Astronomical Society* (2018), vol. 475, 1809.
14. Brahm, Hartman, Jordán et al. (including **Espinoza**): *HATS-43b, HATS-44b, HATS-45b, and HATS-46b: Four Short-period Transiting Giant Planets in the Neptune-Jupiter Mass Range*, *The Astronomical Journal* (2018), vol. 155, 112.
15. Henning, Mancini, Sarkis et al. (including **Espinoza**): *HATS-50b through HATS-53b: four transiting hot Jupiters orbiting G-type stars discovered by the HATSouth survey*, *The Astronomical Journal* (2018), vol. 155, 79.
16. Xu, Rappaport, van Lieshout et al. (including **Espinoza**): *A dearth of small particles in the transiting material around the white dwarf WD 1145+017*, *Monthly Notices of the Royal Astronomical Society* (2018), vol. 474, 4795.
17. Barros, Gosselin, Lillo-Box et al. (including **Espinoza**): *Precise masses for the transiting planetary system HD 106315 with HARPS*, *Astronomy & Astrophysics* (2017), vol. 608, 25.

18. Shporer, Zhou, Fulton et al. (including **Espinoza**): *K2-114b and K2-115b: Two Transiting Warm Jupiters*, The Astronomical Journal (2017), vol. 154, 188.
19. Brahm, Hartman, Jordán et al. (including **Espinoza**): *HATS-43b, HATS-44b, HATS-45b, and HATS-46b: Four Short Period Transiting Giant Planets in the Neptune-Jupiter Mass Range*, The Astronomical Journal (2017), vol. 155, 112.
20. Bayliss, Hartman, Zhou et al. (including **Espinoza**): *HATS-36b and 24 Other Transiting/Eclipsing Systems from the HATSouth-K2 Campaign 7 Program*, The Astronomical Journal (2017), vol. 155, 119.
21. Brahm, Jordán & **Espinoza**: *CERES: A Set of Automated Routines for Echelle Spectra*, Publications of the Astronomical Society of Pacific (2017), vol. 129, 973.
22. Bento, Schmidt, Hartman et al. (including **Espinoza**): *HATS-22b, HATS-23b and HATS-24b: Three new transiting Super-Jupiters from the HATSouth Project*, Monthly Notices of the Royal Astronomical Society (2017), vol. 486, 835.
23. Brahm, Jones, **Espinoza** et al.: *An Independent Discovery of Two Hot Jupiters from the K2 Mission*, Publications of the Astronomical Society of Pacific (2016), vol. 128, 970.
24. de Val-Borro, Bakos, Brahm et al. (including **Espinoza**): *HATS-31b through HATS-35b: Five Transiting Hot Jupiters Discovered By the HATSouth Survey*, The Astronomical Journal (2016), vol. 152, 6.
25. Elorrieta, Eyheramendy, Jordán et al. (including **Espinoza**): *A machine learned classifier for RR Lyrae in the VVV survey*, Astronomy & Astrophysics (2016), vol. 595, 82.
26. Penev, Hartman, Bakos et al. (including **Espinoza**): *HATS-18b: An Extreme Short-period Massive Transiting Planet Spinning Up Its Star*, The Astronomical Journal (2016), vol. 152, 127.
27. Rabus, Jordán, Hartman et al. (including **Espinoza**): *HATS-11b AND HATS-12b: Two Transiting Hot Jupiters Orbiting Subsolar Metallicity Stars Selected for the K2 Campaign 7*, The Astronomical Journal (2016), vol. 152, 88.
28. Ratajczak, Helminiak, Konacki et al. (including **Espinoza**): *Orbital and physical parameters of eclipsing binaries from the ASAS catalogue - IX. Spotted pairs with red giants*, Monthly Notices of the Royal Astronomical Society (2016), vol. 461, 2234.
29. Ciceri, Mancini, Henning et al. (including **Espinoza**): *HATS-15b and HATS-16b: Two Massive Planets Transiting Old G Dwarf Stars*, Publications of the Astronomical Society of the Pacific (2016), vol. 128, 74401.
30. Brahm, Jordán, Bakos et al. (including **Espinoza**): *HATS-17b: A Transiting Compact Warm Jupiter in a 16.3 Day Circular Orbit*, The Astronomical Journal (2016), vol. 151, 89.
31. Bakos, Penev, Bayliss et al. (including **Espinoza**): *HATS-7b: A Hot Super Neptune Transiting a Quiet K Dwarf Star*, The Astrophysical Journal (2015), vol. 813, 111.
32. Zhou, Bayliss, Hartman et al. (including **Espinoza**): *A  $0.24 \pm 0.18 M_J$  double-lined eclipsing binary from the HATSouth survey*, Monthly Notices of the Royal Astronomical Society (2015), vol. 451, 2263.
33. Bayliss, Hartman, Bakos et al. (including **Espinoza**): *HATS-8b: A Low-density Transiting Super-Neptune*, The Astronomical Journal (2015), vol. 150, 49.

34. Mancini, Hartman, Penev et al. (including **Espinoza**): *HATS-13b and HATS-14b: two transiting hot Jupiters from the HATSouth survey*, Astronomy and Astrophysics (2015), vol. 580, A63.
35. Izzo, Della Valle, Mason et al. (including **Espinoza**): *Early Optical Spectra of Nova V1369 Cen Show the Presence of Lithium*, The Astrophysical Journal (2015), vol. 808, L14.
36. Brahm, Jordán, Hartman et al. (including **Espinoza**): *HATS9-b and HATS10-b: Two Compact Hot Jupiters in Field 7 of the K2 Mission*, The Astronomical Journal (2015), vol. 150, 33.
37. Hartman, Bayliss, Brahm et al. (including **Espinoza**): *HATS-6b: A Warm Saturn Transiting an Early M Dwarf Star, and a Set of Empirical Relations for Characterizing K and M Dwarf Planet Hosts*, The Astronomical Journal (2015), vol. 149, 166.
38. Coronado, Helminiak, Vanzi et al. (including **Espinoza**): *Orbital and physical parameters of eclipsing binaries from the ASAS catalogue - VII. V1200 Centauri: a bright triple in the Hyades moving group*, Monthly Notices of the Royal Astronomical Society (2015), vol. 448, 1937.
39. Fraine, Deming, Benneke et al. (including **Espinoza**): *Water vapour absorption in the clear atmosphere of a Neptune-sized exoplanet*, Nature (2014), vol. 513, 526.
40. Jordán, Brahm, Bakos et al. (including **Espinoza**): *HATS-4b: A Dense Hot Jupiter Transiting a Super Metal-rich G star*, The Astronomical Journal (2014), vol. 148, 29.
41. Angeloni, Contreras Ramos, Catelan et al. (including **Espinoza**): *The VVV Templates Project Towards an automated classification of VVV light-curves. I. Building a database of stellar variability in the near-infrared*, Astronomy and Astrophysics (2014), vol. 567, A100.
42. Helminiak, Brahm, Ratajczak et al. (including **Espinoza**): *Orbital and physical parameters of eclipsing binaries from the All-Sky Automated Survey catalogue. VI. AK Fornacis: a rare, bright K-type eclipsing binary*, Astronomy and Astrophysics (2014), vol. 567, A64.
43. Zhou, Bayliss, Penev et al. (including **Espinoza**): *HATS-5b: A Transiting Hot Saturn from the HATSouth Survey*, The Astronomical Journal (2014), vol. 147, 144.
44. Zhou, Bayliss, Hartman et al. (including **Espinoza**): *The mass-radius relationship for very low mass stars: four new discoveries from the HATSouth Survey*, Monthly Notices of the Royal Astronomical Society (2014), vol. 437, 2831.
45. Bayliss, Zhou, Penev et al. (including **Espinoza**): *HATS-3b: An Inflated Hot Jupiter Transiting an F-type Star*, The Astronomical Journal (2013), vol. 146, 113.
46. Mohler-Fischer, Mancini, Hartman et al. (including **Espinoza**): *HATS-2b: A transiting extrasolar planet orbiting a K-type star showing starspot activity*, Astronomy and Astrophysics (2013), vol. 558, A55.
47. Penev, Bakos, Bayliss et al. (including **Espinoza**): *HATS-1b: The First Transiting Planet Discovered by the HATSouth Survey*, The Astronomical Journal (2013), vol. 145, 5.

## Invited Talks

Seminar Talk, Departamento de Ciencias Físicas, Facultad de Ciencias Exactas, Universidad Andrés Bello, Santiago, Chile.

05/2019

Seminar Talk, Departamento de Astronomía, U. de Chile, Santiago, Chile.	05/2019
Seminar Talk, Space Telescope Science Institute (STScI), Baltimore, USA.	01/2019
Astronomical Time Series 2019, MPA, Heidelberg, Germany.	01/2019
Königstuhl Colloquium, MPA, Heidelberg, Germany.	05/2018
Atmospheres of Disks and Planets Workshop, Ringberg Castle, Germany.	04/2017
CSH Seminar, Center for Space and Habitability, Bern, Switzerland.	01/2017
Stars and Planets Seminar, Harvard-Smithsonian CfA, Boston, USA.	11/2016
Disks and Planets Seminar, Universidad Diego Portales, Santiago, Chile.	08/2016
Kavli Summer Program Seminar, UCSC, Santa Cruz, USA.	07/2016
Planet and Star Formation Coffee Talk, MPA, Heidelberg, Germany.	07/2015
Instituto de Astrofísica de Canarias Seminar, Tenerife, Spain.	07/2015
Joint OSU-PUC Workshop Talk, Ohio State University, Columbus, USA.	05/2014
ORIGINS Seminar, Center for Astrobiology, University of Arizona, Tucson, USA.	03/2014
XI Chilean Astronomical Society Annual Science Meeting, San Esteban, Chile.	01/2014
First International Meeting in Astrostatistics in Valparaíso, Valparaíso, Chile.	05/2013

## Service

Member of the SOC for MPA's PSF 2018 Retreat	2018
Co-Lead (with E. Pallé) of the CARMENES TESS Working Group	2018—present
Member of the CARMENES Exoplanet Atmospheres Working Group	2017—present
Reviewer for The Journal of Open Source Software	2018—present
Reviewer for The Astrophysical Journal	2018—present
Reviewer for The Astronomical Journal	2019—present
Reviewer for Astronomy & Computing	2018—present
Reviewer for the Argentinian Commission of Physical Sciences (FONCyT)	2017—2018
Reviewer for the CSH fellowships at the University of Bern	2017
Reviewer for Publications of the Astronomical Society of the Pacific	2017—present

## Outreach (Selected talks, events & positions)

Talk at “Subercaseaux College” School, Santiago, Chile	05/2019
Scientist at the “Skype a Scientist” Initiative	2018—present
Winner of HD Max-Planck 2018 Science Slam, Heidelberg, Germany	09/2018
Winner of MPA's 2018 Science Slam, Heidelberg, Germany	08/2018

Talk at “Subercaseaux College” School, Santiago, Chile	03/2018
Public talk at Astronomy on Tap Heidelberg, Germany	02/2018
Weekly astronomy show on Chilean national radio station “Futuro FM”	2015–2017
Monthly astronomy blog at the “Telescopios Chile” web portal	2015–present
Talk at “Colegio Parroquial San Miguel” School, Santiago, Chile	09/2017
Public talk at Mosto Bar for “Beerstrophysics”, Santiago, Chile	08/2017
Talk at “Colegio Inglés de Talca” School, Talca, Chile	08/2017
Public talk for the “Asteroid Day”, PUC, Santiago, Chile	06/2017
Talk at Google Chile, Santiago, Chile	05/2017
Public Talk at “Casa de la Cultura PAC”, Santiago, Chile	05/2017
Public Talk at “Concierto Cielos”, Santiago, Chile	03/2017
Talk to High School Teachers at “Chile VA”, Pícarquín, Chile	01/2017
Founder and Coordinator of the “Bling Bling Universe” astronomy initiative	2009–2015
Director of the “Itinerant Physics” outreach program	2009–2013

## Teaching

<b>Teacher, ProCredit Academy, Fürth, Germany</b>	2019A
Course: “The Universe Around Us” (35 hours per course, 4 courses)	
<b>Teacher, Center of Study and Development of Talent, Penta UC, Santiago, Chile</b>	2014A, 2014B, 2016A
Course: “Orders of Magnitude” (50 hours per course)	
<b>Invited Lecturer, Faculty of Economics and Business, U. de Chile, Santiago, Chile</b>	2016A, 2016B, 2017A
Course: “Introduction to Science” (one lecture per semester)	
<b>Teaching Assistant:</b>	
ASP5408: Statistics for Astronomers (PUC)	2012–2016
AST0421: Experimental Astrophysics (PUC)	2014B
AST0212: Introduction to Data Analysis (PUC)	2014A
AST1525: Putting Numbers to the Earth and the Universe (PUC)	2014A
AST0311: General Astrophysics (PUC)	2013A
FIS101M: General Physics for the Military School (PUC)	2011B
FIS120: Electricity & Magnetism (UTFSM)	2010–2011

## Student Supervision & Mentoring

<b>Diana Kossakowski (Mentor; PhD Student)</b>	2018 — present
Project: “Gaussian Processes applied to transit lightcurves and radial velocities”   Institution: MPIA, Germany.	
<b>Emily Sandford (Mentor; PhD Student)</b>	2018 — present
Project: “Gaia & Singly Transiting Exoplanets”   Institution: PGIF Columbia/PUC Exchange Program, USA/Chile.	

**Jayshil Patel (Master Thesis Advisor)**

2019A

Thesis title: "Study of the limb darkening effect using exoplanet transit light curves from TESS data" | Institution: S V National Institute of Technology, India.

**Jennifer Fienco (Undergraduate Thesis Co-Advisor)**

2019A

Thesis title: "Analitical Chemical Equilibrium for Exoplanetary Atmospheres" | Institution: Pontificia Universidad Católica de Chile, Chile.

**Roy Van der Westhuizen (Undergraduate Thesis Co-Advisor)**

2015B

Thesis title: "Virtual exoplanet laboratory: APIastro" | Institution: Pontificia Universidad Católica de Chile, Chile.