

# Andrés F. Izquierdo

· CURRICULUM VITAE ·

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## Education & Employment

### NASA Hubble Fellowship Program - Sagan Fellow

FL, United States

UNIVERSITY OF FLORIDA

2024 - present

- Project title: “Mining the kinematics of discs to hunt for planets in formation”.
- Faculty Supervisor: Dr. Jaehan Bae

### PhD. Astrophysics

Germany and Netherlands

EUROPEAN SOUTHERN OBSERVATORY & LEIDEN OBSERVATORY

2019 - 2023

- Project title: “Mining the kinematics of discs to hunt for planets in formation”.
- Advisers: Prof. Leonardo Testi & Prof. Ewine van Dishoeck & Dr. Stefano Facchini

### MPhil. Astronomy and Astrophysics

Manchester, UK

THE UNIVERSITY OF MANCHESTER

2018 - 2019

- Thesis title: “Gravoturbulent kinematics of resolved molecular clouds in a galactic potential”.
- Adviser: Dr. Rowan J. Smith

### BSc. Astronomy

Medellín, Colombia

UNIVERSIDAD DE ANTIOQUIA

2013 - 2018

- Thesis title: “Radiative transfer modelling of W33A-MM1: 3D structure and dynamics of a complex massive star-forming region” - summa cum laude.
- Adviser: Dr. Roberto Galván-Madrid (IRyA - UNAM)

## Refereed Publications & Software

As of July 2025, I am the author of 43 refereed publications, including 6 as first author and 8 as second or third author with major contributions. I have also developed three Python packages for astronomical analyses. Check out my ADS library for an up-to-date overview of my work [\[link\]](#).

### FIRST AUTHOR

- 6 **exoALMA III: Line-intensity Modeling and System Property Extraction from Protoplanetary Disks.**  
[Izquierdo, A. F.](#), Stadler, J. et al. 2025. ApJ Letters.
- 5 **The Disc Miner II: Revealing Gas substructures and Kinematic signatures from planet-disc interaction through line profile analysis.**  
[Izquierdo, A. F.](#), Testi, L. et al. 2023. A&A.
- 4 **A new planet candidate detected in a dust gap of the disc around HD 163296 through localised kinematic signatures. An observational validation of the Discminer.**  
[Izquierdo, A. F.](#), Facchini, S. et al., 2022. ApJ.
- 3 **The Disc Miner I: A statistical framework to detect and quantify kinematical perturbations driven by young planets in discs.**  
[Izquierdo, A. F.](#), Testi, L. et al., 2021. A&A.
- 2 **The Cloud Factory II: Gravoturbulent Kinematics of Resolved Molecular Clouds in a Galactic Potential.**  
[Izquierdo, A. F.](#), Smith, R. J. et al., 2021. MNRAS.
- 1 **Radiative transfer modelling of W33A MM1: 3D structure and dynamics of a complex massive star-forming region.**  
[Izquierdo, A. F.](#), Galván-Madrid, R. et al., 2018. MNRAS.
- 0 **Refereed software: SF3DMODELS[web], PCAFACTORY[web], DISCMINER[web].**  
[Izquierdo, A. F.](#) et al., 2018-2023.

### SECOND OR THIRD AUTHOR

- 8 **exoALMA XVIII: Interpreting Large-scale Kinematic Structures as Moderate Warping**  
Winter, A., Benisty, M., [Izquierdo, A. F.](#) et al. 2025. ApJ Letters.
- 7 **exoALMA V: Gaseous Emission Surfaces and Temperature Structures**  
Galloway-Sprietsma, M., Bae, J., [Izquierdo, A. F.](#) et al. 2025. ApJ Letters.
- 6 **exoALMA VII: Benchmarking Hydrodynamics and Radiative Transfer Codes.**  
Bae, J., Flock, M., [Izquierdo, A. F.](#) et al. 2025. ApJ Letters.
- 5 **High turbulence in the IM Lup protoplanetary disk.**  
Paneque-Carreño, T., [Izquierdo, A. F.](#) et al. 2023. A&A.
- 4 **A kinematically detected planet candidate in a transition disk.**  
Stadler, J., Benisty, M., [Izquierdo, A. F.](#) et al. 2023. A&A Letters.
- 3 **Clustered Formation of Very Massive Stars within an Ionized Rotating Disk.**  
Galván-Madrid, R., Zhang, Q., [Izquierdo, A. F.](#) et al. 2023. ApJ Letters.
- 2 **A giant planet shaping the disk around the very low-mass star CIDA 1.**  
Curone, P., [Izquierdo, A. F.](#) et al. 2022. A&A.
- 1 **On the Effects of Self-obscuration in the (Sub)Millimeter Spectral Indices and the Appearance of Protostellar Disks.**  
Galván-Madrid, R., Liu, H. B., [Izquierdo, A. F.](#) et al. 2018. ApJ.

## OTHER CO-AUTHORED PUBLICATIONS

- 16,29 **exoALMA Focus Issue [[website](#)]**  
exoALMA et al. (incl. [Izquierdo, A. F.](#)) 2025. ApJ Letters.
- 15 **ngVLA Synthetic Observations of Ionized Gas in Massive Protostars**  
Jáquez-Domínguez, J. et al. (incl. [Izquierdo, A. F.](#)) 2025. ApJ.
- 14 **A Wideband Chemical Survey of Massive Star-forming Regions at Subarcsecond Resolution with the Submillimeter Array**  
Law, C. et al. (incl. [Izquierdo, A. F.](#)) 2025. ApJS.
- 13 **V892 Tau: A tidally perturbed circumbinary disc in a triple stellar system**  
Alaguero, A. et al. (incl. [Izquierdo, A. F.](#)) 2024. A&A.
- 12 **Planet-driven spirals in protoplanetary discs: Limitations of the semi-analytical theory for observations**  
Fasano, D. et al. (incl. [Izquierdo, A. F.](#)) 2024. A&A.
- 11 **Rotation curves in protoplanetary disks with thermal stratification**  
Martire, P. et al. (incl. [Izquierdo, A. F.](#)) 2024. A&A.
- 10 **Massive clumps in W43-main: Structure formation in an extensively shocked molecular cloud**  
Lin, Y. et al. (incl. [Izquierdo, A. F.](#)) 2024. A&A.
- 9 **MagAO-X and HST High-contrast imaging of the AS 209 disk at  $H\alpha$**   
Cugno, G. et al. (incl. [Izquierdo, A. F.](#)) 2023. AJ.
- 8 **Dynamical mass measurements of two protoplanetary discs.**  
Lodato, G. et al. (incl. [Izquierdo, A. F.](#)) 2023. MNRAS.
- 7 **Directly tracing the vertical stratification of molecules in protoplanetary disks.**  
Paneque-Carreño, T. et al. (incl. [Izquierdo, A. F.](#)) 2022. A&A.
- 6 **Kinematics and brightness temperatures of transition discs – A survey of gas substructures as seen with ALMA.**  
Wölfer, L. et al. (incl. [Izquierdo, A. F.](#)) 2022. A&A.
- 5 **Vertically extended and asymmetric CN emission in the Elias 2-27 protoplanetary disk.**  
Paneque-Carreño, T. et al. (incl. [Izquierdo, A. F.](#)) 2022. A&A.
- 4 **The evolution of temperature and density structures of OB cluster-forming molecular clumps.**  
Lin, Yuxin et al. (incl. [Izquierdo, A. F.](#)) 2022. A&A.
- 3 **Zooming into the Collimation Zone in a Massive Protostellar Jet.**  
Carrasco-González, C. et al. (incl. [Izquierdo, A. F.](#)) 2021. ApJ.
- 2 **The history of dynamics and stellar feedback revealed by the H I filamentary structure in the disk of the Milky Way.**  
Soler, J. D. et al. (incl. [Izquierdo, A. F.](#)) 2020. A&A.
- 1 **The Cloud Factory I: Generating resolved filamentary molecular clouds from galactic-scale forces.**  
Smith, R. J. et al. (incl. [Izquierdo, A. F.](#)) 2020. MNRAS.

## Professional Talks

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- May 2025, Seminar. Seminarios del Círculo Astrofísico de Puerto Rico.
- Mar 2025, Seminar. UF Stars and Planets Journal Club. Florida, US.
- Nov 2024, Contributed talk. Follow the Monarchs: ngVLA Conference. Morelia, Mexico.
- Oct 2024, Seminar. UF Stars and Planets Journal Club. Florida, US.
- July 2024, Invited talk. New Heights in Planet Formation at ESO. Garching, Germany
- Apr 2024, Seminar. UF Stars and Planets Journal Club. Florida, US.
- Jan 2024, Colloquium. UF Astronomy Colloquium. Florida, US.
- Nov 2023, Colloquium. PhD Colloquium of the Leiden Observatory. Leiden, Netherlands.
- Aug 2023, Invited talk. Disk science day at the Leiden Observatory. Leiden, Netherlands.
- May 2023, Seminar. Planet formation Seminar at the University of Milan. Milan, Italy.
- Feb 2023, Seminar. Planet formation group meeting at the Leiden Observatory. Leiden, Netherlands.
- Dec 2022, Seminar. SMA Science Seminar at CfA. Cambridge, US.
- Nov 2022, Contributed Talk. Disks and Planets at ESO. Munich, Germany.
- Nov 2022, Seminar. UF Stars and Planets Seminar. Florida, US.
- Sep 2022, Colloquium. IRyA Astronomy Colloquium. Morelia, Mexico.
- Jun 2022, Seminar. Astrobigné at the Arcetri Observatory. Arcetri, Italy.
- May 2022, Seminar. Symposium of the Dustbusters summer school. Milan, Italy.
- Apr 2022, Seminar. MPIA Planet formation group meeting. Heidelberg, Germany.
- Jan 2022, Seminar. MPE-CAS journal club on star and planet formation. Munich, Germany.
- Oct 2021, Contributed talk. MIAPP: Structure formation in planet-forming disks. Munich, Germany.
- Jun 2021, Seminar. Star and planet formation group meeting. Universidad de Chile.
- May 2021, Contributed talk. Core2disk: From prestellar cores to solar nebulae II. Paris, France.
- Mar 2021, Invited talk. ECOGAL Post-processing workshop. Paris, France.
- Feb 2021, Seminar. ECOGAL seminar series. Heidelberg, Germany.
- Oct 2020, Contributed talk. Research Unit: Transition Disks Conference. Munich, Germany.
- Jun 2019, Poster. Zooming in on Star Formation. Nafplio, Greece.
- May 2019, Seminar. Sun, Stars and Galaxies group seminar series. Manchester, UK.
- Feb 2019, Invited talk. Radio Astronomy for Development in the Americas, Big Data workshop. Medellin, Colombia.
- Nov 2018, Invited talk. JBCA Symposium. Manchester, UK.
- Jun 2018, Seminar. Seminario del Grupo de Astrofísica Computacional. Medellin, Colombia.
- Mar 2018, Contributed talk. Walking the Line. Arizona, US.
- Jun 2017, Contributed talk. Taller de Radioastronomía TNT. Puebla, Mexico.
- Aug 2016, Contributed talk. The LEAPS Symposium. Leiden, Netherlands.
- Nov 2015, Contributed talk. VI School on Cosmic Rays and Astrophysics. Tuxtla Gutiérrez, Mexico.
- Aug 2015, Contributed talk. ENO-CANCOA 2015. Cali, Colombia.

## Awards & Funding

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- 2024, IAU PhD Prize 2023 - Honourable Mention. Division F Planetary Systems and Astrobiology.
- 2018, UK Newton Fund Scholarship to pursue master's studies at the University of Manchester.
- 2018, *Medellin Investiga* Award for "their contribution to innovative scientific work in the city of Medellin".
- 2018, Best BSc. thesis Prize, *Premio a la Investigación de la Universidad de Antioquia*.
- 2013-2018, x10 Highest GPA of the Astronomy program Award, *Universidad de Antioquia*.
- 2016-2017, Young Researcher Scholarship, *Grupo de Óptica y Fotónica de la Universidad de Antioquia*.
- 2015, High performance Award, *Facultad de Ciencias Exactas de la Universidad de Antioquia*.

## Research advising and Teaching

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- A **2022. A kinematically detected planet candidate in a transition disk.**  
PhD(c) Jochen Stadler (Nice Observatory – Advised with Prof. Myriam Benisty).
- A **2021. Measuring the mass of the disc of WaOph6 with DISCMINER. *Summa cum laude*.**  
BSc thesis, Elena M. Viscardi (University of Milan – Advised with Prof. Giuseppe Lodato).
- A **2020. A giant planet shaping the disk around the very low-mass star CIDA 1.**  
MSc thesis, Pietro Curone (University of Milan – Advised with Prof. Leonardo Testi).
- T **2017. Lecturer for undergraduate course.**  
Computational techniques for physical sciences (Universidad de Antioquia).
- L **2016-2017. Undergraduate Research Assistant (Grupo de Óptica y Fotónica).**  
Design of optical vortex coronagraphs for astronomical instruments (Universidad de Antioquia).
- T **2013-2014. Teaching Assistant.**  
General Astronomy course (Universidad de Antioquia).