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 *April 2025*, I am the author of 42 refereed publications, including 6 as first author and 7 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

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 Hα**
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

- 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. Astrobignè 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

- 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

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 (Univesity of Milan – Advised with Prof. Leonardo Testi).

T **2017. Undergraduate Lecturer.**
Computational techniques for physical sciences (Universidad de Antioquia).

L **2016-2017. Research Assistant (Grupo de Óptica y Fotónica).**
Design of optical vortex coronagraphs for astronomical instruments (Universidad de Antioquia).

T **2013-2014. Undergraduate Teaching Assistant.**
General Astronomy (Universidad de Antioquia).