



Isabel Aleman

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Present Position

Postdoctoral Researcher (2012-Present) Astrophysicist, Leiden University (Netherlands)

Previous Positions

Postdoctoral Fellow (2011-2012) Astrophysicist, University of Rio Grande do Sul (Brazil)

Postdoctoral Fellow (2010-2011) Astrophysicist, University of São Paulo (Brazil)

Postdoctoral Fellow (2009-2010) Astrophysicist, The University of Manchester (UK)

Postdoctoral Fellow (2007-2009) Astrophysicist, University of São Paulo (Brazil)

Education

- **PhD (2007)** Astronomy, University of São Paulo (Brazil)
- **Master (2002)** Astronomy, University of São Paulo (Brazil)
- **Bachelor in Physics, Astronomy Emphasis (1999):** University of São Paulo, Brazil
 - **Undergraduate Research**, 1998-1999

Advanced Schools and Mini-Courses

- **Cloudy Code Workshop**, Warsaw, Poland (2015)
- **Python Boot Camp**, Leiden Observatory, Leiden, The Netherlands (2015)
- **The Interaction of Stars with the Interstellar Medium of Galaxies**, Les Houches Physics School, Les Houches, France (2014)
- **Herschel Data Processing Workshop for Newcomers**, ESAC/Spain, Online Course (2013)
- **NebulAtom: a capacity development workshop for Latin American astronomers on emission-line objects in the Universe**, Choroní, Venezuela (2013)
- **South American Gemini Data Workshop**, Gemini Observatory, Brazil (2011)
- **IV INPE Advanced School on Astrophysics “Radio Astronomy for the 21st Century”**, National Institute of Space Research (INPE), São José dos Campos, Brazil (2011)
- **Course on Authorship, Refereeing, and Editorship**, Elsevier, Institute of Nuclear Research, and University of São Paulo, Brazil (2011)
- **Programming in Astronomy**, IAG-USP, São Paulo, Brazil (2010)

- **IDL (Interactive Data Language) for Astronomers**, IAG-USP, São Paulo, Brazil (2010)
- **Astrophysics Summer School “The Gaseous Universe”**, University of Oxford and the Nagoya University, Oxford, UK (2010)
- **XIV Advanced School on Astrophysics “Theory and Observations of Accretion Disks”**, IAG-USP, Águas de São Pedro, Brazil (2008)
- **“What Emission Lines Can Tell Us?”**, by Dr. Grazyna Stasińska, IAG-USP, Brazil (2007)
- **1st INPE Advanced School on Radioastronomy**, National Institute of Space Research (INPE), Atibaia, Brazil (2006)
- **1st IMPRS Summer School 2006 “Physics of the Interstellar Medium”**, Max Planck Institute for Astronomy (MPIA), Heidelberg, Germany (2006)
- **XII Advanced School on Astrophysics “Interstellar Medium: from the Solar System to the Large Scale Universe”**, IAG-USP, Itatiba, Brazil (2004)
- **XI Advanced School on Astrophysics “High Energy Astrophysics and Cosmology”**, IAG-USP, Campos do Jordão, Brazil (2002)
- **Teaching and Learning Techniques Course**, IAG-USP, São Paulo (2003)
- **X Advanced School on Astrophysics “Evolution of Galaxies and Stars”**, IAG-USP, Mangaratiba, Brazil (2000)

Fellowships, Grants, and Awards

- **Postdoc Fellowship**: NWO/Leiden Observatory (international call)
- **Postdoc Fellowship**: CAPES/PRODOC (Brazilian National Funding Agency), national call; includes a generous grant managed by the fellow and the Institute supervisor
- **Postdoc Fellowship**: 2 fellowships CNPq (Brazilian National Funding Agency), obtained after the approval by peer review process of projects I wrote (national wide competition)
- **Postdoc Fellowship**: FAPESP (São Paulo State funding agency, the most prestigious fellowship in Brazil at this level); obtained after the project I wrote with my supervisor was approved by peer review process (national competition with researches from all fields that apply for a post-doc in the State); includes a generous grant managed by the fellow
- **PhD Fellowship**: CAPES/PROEX
- **Master Fellowship**: FAPESP
- **Undergraduate Research**: CNPq 1998-1999
- Requested and earned several grants to fund travel to conferences and paper publication: FAPESP, University of São Paulo, International Astronomical Union, Max Planck Institute, etc.
- Prize Best Undergraduate Research Work, IAG-USP Scientific Initiation Symposium, Brazil (1999)

Membership

- **Brazilian Astronomical Society (SAB)**
- **International Astronomical Union (IAU)**
- **Dutch Astrochemistry Network (DAN)**

Meetings – Participant

I have participated in over 20 scientific meetings (local, regional, and international), presenting posters and talks in most of them. For example:

- **30 Years of Photodissociation Regions**, Asilomar, USA (2015) [Talk; Session Chair](#)
- **225th AAS Meeting, Special Session “The Emerging Multiwavelength View of Planetary Nebulae”**, Seattle, USA (2015) [Talk](#)
- **Faraday Discussion 168: Astrochemistry of Dust, Ice, and Gas**, Leiden, Netherlands [Poster](#)
- **The Molecular Physics of Interstellar PAHs**, Lorentz Center Workshop, Netherlands (2013) [Proposed the creation of the AstroPAH Newsletter during the discussions](#)
- **C⁺ as an Astronomical Tool**, Lorentz Center Workshop, Leiden, the Netherlands (2013)
- **ChanPlaNS/HerPlaNS Joint Team Meeting & Workshop**, Madrid, Spain (2013) [Talk](#)
- **Complex Molecules in Space Meeting** – Federal University of Rio Grande do Sul, Brazil (2011) [Talk and Local Organizing Committee](#)
- **IAU Symposium 280 “The Molecular Universe”**, Toledo, Spain (2011) [Poster](#)
- **Asymmetric Planetary Nebulae V**, England (2010) [Talk](#)
- **Jodrell Bank Centre for Astrophysics Internal Symposium**, England (2010) [Talk](#)
- **IAU Symposium 231 “Astrochemistry Throughout the Universe: Recent Successes and Current Challenges”** – IAU/Caltech, USA (2005) [Poster](#)
- **Annual Meeting of the Brazilian Astronomical Society (SAB)** – Brazil (1999, 2000, 2002, 2004, 2008, 2011, 2014) [Talk or Poster Presentations in all of them](#)

Meetings – Organizing Committees

- **WorkPlaNS: Workshop on Planetary Nebula Observations**, Lorentz Center Workshop, Netherlands (2016) [Scientific Organizing Committee](#)
- **International Symposium and Workshop on Astrochemistry**, Campinas, Brazil (2016) [Local Organizing Committee](#)
- **30 Years of Photodissociation Regions: a Symposium to Honor David’s Hollenbach Lifetime in Science**, Asilomar, USA (2015) [Head of the Local Organizing Committee](#)
- **Cloudy Workshop**, Leiden, The Netherlands (2014) [Local Organizing Committee](#)
- **The Interaction of Stars with the Interstellar Medium of Galaxies**, Les Houches Physics School, Les Houches, France (2014) [Co-chair of the Scientific and Local Organizing Committee](#)
- **Conference and Workshop “Galactic Nuclei and their Connection with Stars and the Environment” in Honour of Professor Miriani G. Pastoriza**, international meeting, IF-UFRGS, Gramado, Brazil (2012) [Local Organizing Committee](#)
- **Complex Molecules in Space Meeting**, Federal University of Rio Grande do Sul, Porto Alegre, Brazil (2011) [Local Organizing Committee](#)
- **Organizer of local meetings, seminars, journal clubs, courses, dinners and other activities in all the institutions I have worked**

Teaching, Lectures, Talks, Supervising

- Many classes, seminars and **lectures on Astrophysics** to audiences with different levels of knowledge
- **Substitute Teacher in the course “Stellar Structure and Evolution”**, Leiden University, (2015) Period: 1 month
- **Teacher** undergraduate course “Exploring the Universe: from Quarks to Quasars”, Institute of Physics, UFRGS (2011-2012)
- **Teaching Assistant** in the undergraduate course “Introduction to Astronomy”, IAG-USP (2003)
- **Teaching Assistant** in the one-week training course in Astronomy for a high school science teachers training school, IAG-USP (2003)
- Help **tutoring and mentoring** several undergraduate and graduate students (2007-Present)
- Private tutor of Physics and Mathematics for high school and undergraduate students

Outreach Activities

- **Talks and nights of sky observation for the general public; development and application of practical activities for teachers training course; contribution to texts for outreach publications; creator and executive editor of AstroPAH (see below)**

Editorship

- **Creator and Executive Editor of [AstroPAH](#)**, a monthly newsletter focused on PAHs research relevant to Astronomy (2013-present)

Science Policy and Peer Review

- **Representative** of the Postdoctoral Fellows at the Scientific Board of the Astronomy Department of IAG-USP (2010-2011)
- **Representative** of the Postdoctoral Fellows at the Institute Council, Leiden Observatory (2013-present)
- **Referee:** ApJ, MNRAS (papers), Gemini Observatory (observation proposals), student selection committees (Leiden/ESA summer program, ISM Advanced School, and Leiden PhD students selection), Belgian Federal Science Policy Office (evaluation of grant requests)

Other Professional Activities

- Elaboration of research projects, fellowship and grant requests, reports, scientific cases, papers, and other **academic texts**.
- Co-I in **proposals** for observatory time (VLT/SINFONI, VLT/MUSE, VLT/X-Shooter, Gemini, HST)
- Astronomer at the rooftop observatory of IAG-USP (used by students and for activities with the public; responsible for organizing and guide visits, night shifts; report to the director)

Relevant Skills and Experience

- **Long experience in scientific research**
- **Project planning, development and leadership**
- **Fast learner**
- **Scientific and creative thinking**
- **Skilled with computers**
- **Scientific Computation**
- **Data visualization**
- **Programming Languages:** FORTRAN and IDL; good notions of C and HTML; starting in Python
- **Operational Systems:** Mac OSX, Windows and Linux
- **Software:** numerous, e.g. astronomical (Aangaba and Cloudy photoionization codes, PyNeb, Splat, etc., plus codes I have developed myself, in Fortran and IDL); text editors (MS Office, Open Office, etc.), LaTeX editors (MikTeX shells, etc.), image editors (CorelDraw, GIMP, Inkscape, etc.), spreadsheet and plot editors (Excel, Open Office, Origin, MathCad, IDL, etc.), presentations (Powerpoint, Open Office) and others
- **Organization of events, paper and project refereeing, editorial work, oral and poster presentation, science policy**
- **Artistic skills:** Design of posters, websites, logos, etc.
- **Fluent in English and Portuguese; good knowledge of Spanish**

Theses

- **Master's Thesis “The H₂ Molecule in Planetary Nebulae”**, Astronomy Department, IAG-USP, University of São Paulo, Supervisor: Prof. Ruth Gruenwald
- **Doctoral Thesis “The Infrared Emission of H₂ from Planetary Nebulae”**, Astronomy Department, IAG-USP, University of São Paulo, Supervisor: Prof. Ruth Gruenwald

Refereed Papers

- **Herschel Planetary Nebula Survey (HerPlaNS) - First Detection of OH⁺ in Planetary Nebulae** ([ADS Link](#)) ([Link to the Press Release](#))
Aleman, I.; Ueta, T.; Ladjal, D.; and the HerPlaNS team (2014) A&A, 566, 79
- **The Herschel Planetary Nebula Survey (HerPlaNS). I. Data overview and analysis demonstration with NGC 6781** ([ADS Link](#))
Ueta, T.; Ladjal, D.; Exter, K. M.; Otsuka, M.; Szczerba, R.; Siódmiak, N.; Aleman, I.; and the HerPlaNS team (2014) A&A, 565A, 36
- **Molecular Hydrogen and [Fe II] in Active Galactic Nuclei III: LINERS and Star Forming Galaxies** ([ADS Link](#))
Riffel, R.; Rodríguez-Ardila, A.; Aleman, I.; Brotherton, M. S.; Pastoriza, M. G.; Bonatto, C.; Dors, O. L. (2013) MNRAS, 430, 2002
- **Molecular Chemistry and the Missing Mass Problem in Planetary Nebulae** ([ADS Link](#))
Kimura, R. K.; Gruenwald, R.; Aleman, I. (2012), A&A, 541, 112

- **Modelling the Warm H₂ Infrared Emission of the Helix Nebulae Cometary Knots** ([ADS Link](#))
Aleman, I.; Zijlstra, A.; Matsuura, M.; Gruenwald, R.; Kimura, R. K. (2011) MNRAS, 416, 790
- **H₂ Infrared Line Emission from the Ionized Region of Planetary Nebulae** ([ADS Link](#))
Aleman, I.; Gruenwald, R. (2011) A&A, 528, 74
- **Radio-continuum Spectrum, Brightness Temperature, and Planetary Nebulae Properties”** ([ADS Link](#))
Gruenwald, R.; Aleman, I. (2007) A&A, 461, 1019
- **Molecular Hydrogen in the Ionized Region of Planetary Nebulae** ([ADS Link](#))
Aleman, I.; Gruenwald, R. (2004) ApJ, 607, 865

In Preparation

- **Herschel Planetary Nebula Survey (HerPlaNS) – III. Molecular Emission in the Far-Infrared Spectra of Planetary Nebulae**
Aleman, I.; Ueta, T.; Ladjal, D.; Exter, K. M.; Tielens, A. G. G. M.; and the HerPlaNS team, to be submitted to A&A soon
- **The Herschel Planetary Nebula Survey (HerPlaNS). II. Spatially-Resolved Dust Properties in the Far-IR**
Ladjal, D.; Ueta, T.; Exter, K. M.; Aleman, I.; and the HerPlaNS, to be submitted to A&A in the next months
- **Properties of the fullerene C₆₀-containing Planetary Nebula Lin 49 in the SMC**
Otsuka, M.; Kemper, F.; Aleman, I.; Leal-Ferreira, M. L.; Cami, J.; Ochsendorf, B.; Bernard-Salas, J.; Peeters, E., to be submitted to MNRAS soon
- **X-shooter Observations of the Planetary Nebula Tc1**
Aleman, I.; Leal-Ferreira, M. L.; Cami, J.; Wesson, R.; Stock, D.; Bernard-Salas, J.; Peeters, E., to be submitted to A&A in the next months
- **“On the Distribution of HII regions and PNe in IR Color-Color Diagrams”**
Aleman, I.; Gruenwald, R.; Kimura, R. K., to be submitted to A&A in the next months

Proceedings (Short Papers only)

- **“Modelling the H₂ Infrared Emission of the Helix Nebulae Cometary Knots”**
Aleman, I., Zijlstra, A., Matsuura, M., Gruenwald, R., & Kimura, R. K. (2010) in proceedings of Asymmetric Planetary Nebulae, ed. Albert Zijlstra, Iain McDonald, & Eric Lagadec, online publication by Ebrary, available through ADS/NASA.

Outreach Articles

- **“New Molecules Around Stars”, ESA Web Release for the paper**, Bauer, M., Aleman, I., Etxaluze, M., Pilbratt, G. and the HerPlaNS and MESS teams, 2014

http://www.esa.int/Our_Activities/Space_Science/Herschel/New_molecules_around_old_stars

- **“Astroquímica”**, Aleman, I., (2009), in “Agenda Astronômica 2009”, coord. Jacques Lépine, p.196 (São Paulo, IAG-USP)
- **“Molecules in the Space between the Stars”**
Aleman, I., (2003) Órbita IPEN, São Paulo - SP, v. 17, p. 7-7, Ed. 31 Aug 2003
Nuclear Research Institute (IPEN), original title in Portuguese “Moléculas no espaço entre estrelas”

Editorial Experience

- **AstroPAH Newsletter** –monthly publication (<http://astropah-news.strw.leidenuniv.nl>)
Tielens, A. G. G. M.; **Aleman, I.**; Candian, A.; Micelotta; Petrignani, A.; Sciamma-O’Brian, E. (2013-Present)
Creator and Executive Editor
Responsibilities: initial development (content, layout, publication process), everyday overview the whole publication process, coordinate the preparation of each section with other editors, write and correct texts, produce the final file based on products from each of the section editors, develop and maintain the AstroPAH website.

Other Academic Texts

- **Numerous Reports, Projects and other texts for many academic purposes**

Software Development

- **Routines in to include molecules and dust physics and chemistry in the photoionization code Aangaba (see refereed publications above).**
- **Many scientific programs and scripts in Fortran, IDL and basic Python and C**

Webpage developing and maintenance

- PDR30 Symposium: <http://pdr30.strw.leidenuniv.nl/> (collaboration with C. Mackie and A. Candian)
- ISM School, Les Houches: <http://ism2014.strw.leidenuniv.nl> (collaboration with A. Candian)
- AstroPAH Newsletter: <http://astropah-news.strw.leidenuniv.nl>

Conference Poster Designs (examples):

ÉCOLE DE PHYSIQUE
des HOUCHEs

Université Joseph Fourier

Advanced School
**THE INTERACTION OF STARS
WITH THE INTERSTELLAR MEDIUM
OF GALAXIES**
20-25 April 2014 - Les Houches - France

A comprehensive view of the different physical and chemical processes acting in HII regions, photodissociation regions (PDRs) and shocks in the interstellar medium.

Scientific Organising Committee
ISABEL ALEMAN (Leiden Observatory)
ALESSANDRA GANDIAN (Leiden Observatory)
JACQUES LE BOURLOT (Observatoire de Paris and Université Paris-Diderot, France)
ALEXANDER TIELENS (Leiden Observatory)

Lecturers
JOHN BALLY (University of Colorado, USA)
ROMANO CORRADI (Instituto de Astrofísica de Canarias, Spain)
GARY FERLAND (University of Kentucky, USA)
DAVID FLOWER (Durham University, UK)
PIERRE HILY-BLANT (Université Joseph Fourier, France)
JACQUES LE BOURLOT (Observatoire de Paris and Université Paris-Diderot, France)
MARGARET MEIXNER (STScI, USA)

Les Houches is a village located in Chamrousse valley, in the French Alps. Established in 1957, the Physics School is situated at 1700 m above sea level in natural surroundings, with magnificent views on the Mont Blanc mountain range. Les Houches Physics School is affiliated with Université Joseph Fourier Grenoble (UJF). The school is part of international faculty of IUP and Grenoble IUP and is supported by the UJF, the Centre National de la Recherche Scientifique (CNRS) and the Division des Sciences de l'Univers du Commissariat à l'Énergie Atomique (CEA-DSM), Ecole de Physique des Houches, Collège des Chimistes, F-71400 Les Houches, France. <http://houches.upg.ac.cn>

Université Leiden <http://ism2014.strw.leidenuniv.nl> Observatoire de Leiden

30 Years of PhotoDissociation Regions
A symposium to honor David Hollenbach's lifetime in science
June 28 - July 3 2015 - Kitt Peak - USA

Scientific Committee
John Bally
Frank Bertoldi
Michael Burton
Paul Goldsmith
Edith Falgarone
Carsten Kramer
William Laffer
Suzanne Madden
Margaret Meixner (co-chair)
Takeshi Onaka
Evelynne Rouff
Linda Taccani
Alexander Tielens (co-chair)
Ernie van Dishoeck

Local Committee
Isabel Aleman
Alessandra Gandian
Edna DeVore
Pamela Soman
Marcelo Leal-Ferreira
Cameron Mackie
Solim Meierink

Topics
The physics and chemistry of PDRs
Models of PDRs
Observations of PDRs in the galactic environment
PDRs and star formation
PDRs and the ISM of galaxies
PDRs in starburst, LUGG, and high-z environments

<http://pdr30.strw.leidenuniv.nl>