

# Cristóbal Sifón

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## Research Interests

I am an observational astrophysicist. My research spans various aspects of galaxy cluster physics including observable–mass scaling relation for cosmological analyses, brightest cluster galaxies, the mass content of cluster galaxies. I am also interested in intrinsic galaxy alignments, both as contaminants for cosmic shear and as a physical mechanism in its own right. I use various tools and techniques to study these phenomena, including weak gravitational lensing, spectroscopy (for both galaxy velocities and physical properties), and the exploitation of optical surveys in general.

I am an active member of the Atacama Cosmology Telescope (ACT), the Kilo-Degree Survey (KiDS) and the Hyper-Suprime Cam Survey (HSC) collaborations.

## Employment and Education

2016 – present	Postdoctoral Research Associate, Princeton University
Sep. 2016	Ph.D. Astrophysics, Universiteit Leiden, The Netherlands <b>Thesis Title:</b> <i>The Connection Between Mass and Light in Galaxy Clusters</i>
Jan. 2012	M.Sc. Astrophysics, P. Universidad Católica de Chile, Chile <b>Thesis Title:</b> <i>The Atacama Cosmology Telescope: Dynamical Masses and Scaling Relations for a Sample of Massive Sunyaev-Zel'dovich Selected Galaxy Clusters</i>
Jan. 2010	B.Sc. Astronomy, P. Universidad Católica de Chile, Chile <b>Thesis Title:</b> <i>Abell 1882: A New Supergroup in the Nearby Universe?</i>

## Grants & Internships

- 2011 Science Intern at Gemini South Observatory, La Serena, Chile (6 months). Worked on the development of the FLAMINGOS-2 data reduction pipeline.
- 2011 Internship at Rutgers University, NJ, USA (5 weeks).
- 2011 ALMA-CONICYT grant for an international conference.
- 2009 Science Intern at Gemini South Observatory, La Serena, Chile (5 months). Worked on my undergraduate thesis project under the supervision of Dr. Percy Gómez.

## Scientific Meetings

### Contributed Talks

- 2016 Jul. 11-15    *Subhaloes in the real Universe: satellite galaxy-galaxy lensing*  
From Theory to Applications: Celebrating a Century of Gravitational  
Lensing, Leiden, Netherlands
- 2016 Jul. 4-8    *Subhaloes in the real Universe: satellite galaxy-galaxy lensing*  
Probing New Frontiers with Cluster Lenses, EWASS 2016, Athens, Greece
- 2015 Jul. 13-16    *Satellite galaxy-galaxy lensing in KiDS×GAMA*  
Accurate Astrophysics, Correct Cosmology. London, UK
- 2015 Jun. 22-26    *Galaxy-galaxy lensing of satellite galaxies in KiDS×GAMA*  
The Many Pathways to Galaxy Growth, Prato, Italy
- 2011 Sep. 19-22    *Dynamical Scaling Relations of ACT SZE-selected galaxy clusters*  
Cosmology with X-ray and Sunyaev-Zel'dovich Effect Observations of  
Galaxy Clusters, Huntsville, AL, USA

### Accepted Observing Proposals (as PI)

- |       |              |            |     |  |
|-------|--------------|------------|-----|--|
| 2015A | VLT/FORS2    | 095.A-0009 | 20h | <i>Strong lensing in the most extreme galaxy cluster at high redshift</i>  |
| 2015A | VST/OmegaCam | 095.A-0077 | 6h  | <i>Unbiased mass measurement of a merging, strong lensing cluster hosting a radio relic at <math>z = 0.52</math></i> |
| 2013B | GMRT         | 25_036     | 14h | <i>Dissecting the extended radio emission in the strong lensing cluster PLCK G4.5–19.5 at <math>z = 0.52</math></i>  |

### Visiting Observer

- 2014 Jan    Project: *RELICS: The REd Lens Infrared Cluster Survey* (PI: J. van de Sande).  
IR imaging, New Technology Telescope, La Silla Observatory, Chile, 5 full nights
- 2012 Jul    Project: *Mass Calibration of a Sample of ACT SZE-selected Galaxy Clusters*  
(PI: F. Menanteau). Optical imaging & spectroscopy, Gemini South Observatory,  
Cerro Pachón, Chile, 3 full nights
- 2011 Oct    Project: *Mass Calibration of a Sample of ACT SZE-selected Galaxy Clusters*  
(PI: F. Menanteau). Optical spectroscopy, Gemini South Observatory, Cerro Pachón,  
Chile, 5 full nights
- 2010 Dec    Project: *Mass Calibration and Gas Physics of a Complete Sample of ACT  
SZE-selected Galaxy Clusters* (PI: L.F. Barrientos/F. Menanteau). Optical  
spectroscopy, Gemini South Observatory, Cerro Pachón, Chile, 5 full nights

## Teaching Assistant Experience

- 2013-B Stellar Dynamics (Leiden, Prof. S. Portegies Zwart)
- 2012-A Extragalactic Astrophysics (PUC, Prof. L. F. Barrientos)
- 2011-A Extragalactic Astrophysics (PUC, Prof. L. F. Barrientos)
- 2011-A Laboratory of Thermodynamics and Kinetic Theory (PUC, Prof. U. Volkmann)
- 2010-B Experimental Astrophysics (PUC, Prof. L. F. Barrientos)

## Outreach

- 2012 Co-taught an “Astronomy Course for Seniors” organized by PUC.
- 2011 Participated in “Star Night”, an interactive astronomy workshop organized by people at ESO-Santiago for elementary and secondary school students in social risk.
- 2010 Invited talk for the “FFG14 Almirante Latorre” Chilean navy ship crew on board the ship in the Valparaiso port.
- 2010 Overview talk for students of ages 10-15 at “Juan de Dios Aldea” school in La Pintana, Santiago, as part of a series of presentations called “The Universe”, organized by PUC for students in social risk.

## Technical Expertise

**Programming skills:** I am an experienced python programmer, and I am also familiar with IRAF/PyRAF, C, FORTRAN and IDL (although the latter three rather vaguely). I have written pygmos, a Python/PyRAF pipeline to reduce Gemini-GMOS spectra which is available at <http://www.astro.princeton.edu/~sifon/pygmos/>. Other Python routines I have written are posted at my github page, <https://github.com/cristobal-sifon>.

**Language skills:** Native Spanish, fluent English, basic Dutch.

**Others:** I have served as a referee for A&A, ApJ, and Nature Astronomy.

## Other Work Experience

- Dec. 2007 - Mar. 2008 Ski instructor at Homewood Mountain Ski Resort in Lake Tahoe, CA. Obtained the certification as Level I ski instructor by the Professional Ski Instructors of America (PSIA).
- Dec. 2006 - Mar. 2007 Lift operator at Sun Valley Resort, Sun Valley, ID.

## References

- Prof. David Spergel  
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- Prof. Henk Hoekstra (*PhD advisor*)  
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E-mail: hoekstra@strw.leidenuniv.nl
- Prof. John Hughes  
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136 Frelinghuysen Rd., Piscataway, NJ 08854, USA  
E-mail: jph@physics.rutgers.edu
- Dr. Felipe Menanteau  
Department of Astronomy  
University of Illinois at Urbana-Champaign  
1002 W. Green St., Urbana, IL 61801, USA  
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- Prof. L. Felipe Barrientos (*MSc advisor*)  
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