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Current Research

I am currently working on the follow-up of clusters of galaxies discovered by the Atacama Cosmology Telescope (ACT) through the Sunyaev-Zel'dovich (SZ) effect. Our goal is to characterize the signal of the SZ effect in terms of the mass of the cluster producing it, correlating both quantities through different mass proxies, and also studying the effects that other physical processes such as AGN feedback, and (unresolved) objects such as radio galaxies, may have in these measurements.

I am also part of the Commissioning Team for FLAMINGOS-2 which has recently been installed in Gemini-South. I work in the development of the data reduction pipeline.

Current Studies & Degrees

In September 2012 I will start my PhD in Universiteit Leiden, NL, under the supervision of Prof. Henk Hoekstra, working on weak lensing of galaxy clusters using data from the Kilo-Degree Survey (KiDS).

Jan. 2012 M.Sc. Astrophysics, P. Universidad Católica de Chile, Chile

Thesis Title: *“The Atacama Cosmology Telescope: Dynamical Masses and Scaling Relations for a Sample of Massive Sunyaev-Zel'dovich Selected Galaxy Clusters”*

Jan. 2010 B.Sc. Astronomy, P. Universidad Católica de Chile, Chile

Thesis Title: *“Abell 1882: A New Supergroup in the Nearby Universe?”*

Internships & Visits to Collaborators

Mar. - Apr., 2011 Internship at Rutgers University, NJ, USA, sponsored by Prof. Jack Hughes and Dr. Felipe Menanteau of Rutgers University and Profs. Leopoldo Infante and L. Felipe Barrientos of PUC.

Aug. - Dec., 2009 Science Intern at Gemini South Observatory, La Serena, Chile. Worked on my undergraduate thesis project under the supervision of Drs. Percy Gómez and Christopher Miller, now at the University of Michigan. This work was presented at the 2010 AAS meetings in Washington, D.C. (January) and Miami, FL (May) and highlighted in the Gemini webpage, at <http://www.gemini.edu/node/11388>.

Scientific Meetings Attended

Contributed Talks

- Sep. 19-22, 2011 *Dynamic Scaling Relations of ACT SZE-selected galaxy clusters*
“Cosmology with X-ray and Sunyaev-Zel’dovich Effect Observations of Galaxy Clusters”
Huntsville, AL, USA
- Apr. 5-6, 2011 *Dynamic Scaling Relations of ACT Clusters*
“ACT Analysis Meeting 2011”
Princeton University, NJ, USA
- Jan. 27-29, 2011 *Spectroscopic follow-up of ACT SZE-detected clusters*
“ACT-PIRE Workshop: Galaxy Clusters in the SZ Era”
Umhlanga Rocks, KwaZulu-Natal, South Africa

As audience

- Mar. 3-4, 2011 “Galaxy Formation in a Hierarchical Universe”
P. Universidad Católica de Chile, Santiago, Chile
- Apr. 26-30, 2010 “Supercomputing Techniques in Astrophysics”
P. Universidad Católica de Chile, Santiago, Chile
- Jan. 18-20, 2010 “VIII Annual Meeting of the Chilean Astronomical Society (SOCHIAS)”
Universidad de Concepción, Concepción, Chile
Poster: *The formation of clusters of galaxies caught in the act*
- Dec. 14-15, 2009 “Rutgers-PUC Astrophysics Workshop”
P. Universidad Católica de Chile, Santiago, Chile

Visiting Observer

- Jul., 2012 Project: *Mass Calibration of a Sample of ACT SZE-selected Galaxy Clusters*
(PI: F. Menanteau)
Gemini South Observatory, La Serena, Chile, 3 full nights
- Oct., 2011 Project: *Mass Calibration of a Sample of ACT SZE-selected Galaxy Clusters*
(PI: F. Menanteau)
Gemini South Observatory, La Serena, Chile, 5 full nights
- Dec., 2010 Project: *Mass Calibration and Gas Physics of a Complete Sample of ACT SZE-selected Galaxy Clusters* (PI: L.F. Barrientos/F. Menanteau)
Gemini South Observatory, La Serena, Chile, 5 full nights

Press Releases

- Mar., 2012 Press release by Princeton University on the first detection of the kinematic Sunyaev-Zel’dovich effect made with a combination of data from ACT and the Baryon Oscillations Spectroscopic Survey (BOSS). See Preprint #4.
- Jan., 2012 ESO and Chandra release on “El Gordo,” the most massive known galaxy cluster at high redshift. Also covered by several media all over the world, including CNN, BBC, The Daily Mail and Science Magazine. See Refereed Paper #1.

Teaching Assistant Experience

- 2012-A FIA0411, Extragalactic Astrophysics (PUC; Prof. L. F. Barrientos)
- 2011-A FIA0411, Extragalactic Astrophysics (PUC; Prof. L. F. Barrientos)
- 2011-A FIZ0211, Laboratory of Thermodynamics and Kinetic Theory (PUC; Prof. U. Volkmann)
- 2010-B FIA0421, Experimental Astrophysics (PUC; Prof. L. F. Barrientos)

Outreach

- May-June, 2012 Co-taught an “Astronomy Course for Seniors” organized by PUC.
- Nov., 2011 Participated in “Star Night”, an interactive astronomy workshop organized by people at ESO-Santiago for elementary and secondary school students in social risk.
- Jul. 13, 2010 Invited talk for the “FFG14 Almirante Latorre” Chilean navy ship crew on board the ship in the Valparaiso port.
- Jun. 30, 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.

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.

Language Skills

Native spanish and fluid english. Test scores (taken June, 2011):

- TOEFL: 114 of 120
- GRE V: 570 of 800, percentile 80
- GRE Q: 750 of 800, percentile 82
- GRE A: 4.0 of 6.0, percentile 45

Technical Expertise

I am an experienced python programmer, and I am also familiar with IRAF/PyRAF, C and IDL. I have written `pygmos`, a Python/PyRAF pipeline to reduce Gemini-GMOS spectra which is available at <http://www.astro.puc.cl/~cjsifon/pygmos/>. Other Python routines that I have written are posted at my homepage.

References

- Prof. John P. Hughes
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- Prof. Leopoldo Infante
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- Prof. Christopher J. Miller
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List of Publications

Recent Preprints

6. B. D. Sherwin, S. Das, A. Hajian, G. Addison, J. R. Bond, D. Crichton, M. J. Devlin, J. Dunkley, M. B. Gralla, M. Halpern, J. C. Hill, A. D. Hincks, J. P. Hughes, K. Huffenberger, R. Hlozek, A. Kosowsky, T. Louis, T. A. Marriage, D. Marsden, F. Menanteau, K. Moodley, M. D. Niemack, L. A. Page, E. D. Reese, N. Sehgal, J. Sievers, **C. Sifón**, D. N. Spergel, S. T. Staggs, E. R. Switzer, E. Wollack, **“The Atacama Cosmology Telescope: Cross-correlation of CMB Lensing and Quasars”**, 2012, arXiv:1207.4543, submitted to Phys. Rev. D
5. N. Sehgal, G. E. Addison, N. Battaglia, E. S. Battistelli, J. R. Bond, S. Das, M. J. Devlin, J. Dunkley, R. Dünner, M. B. Gralla, A. Hajian, M. Halpern, M. Hasselfield, M. Hilton, A. D. Hincks, R. Hlozek, J. P. Hughes, A. B. Kosowsky, Y.-T Lin, T. Louis, T. A. Marriage, D. Marsden, F. Menanteau, K. Moodley, M. D. Niemack, L. A. Page, B. Partridge, E. D. Reese, B. D. Sherwin, J. Sievers, **C. Sifón**, D. N. Spergel, S. T. Staggs, D. S. Swetz, E. R. Switzer, E. J. Wollack, **“The Atacama Cosmology Telescope: Relation Between Galaxy Cluster Optical Richness and Sunyaev-Zel’dovich Effect”**, 2012, arXiv:1205.2369, submitted to ApJ
4. N. Hand, G. E. Addison, E. Aubourg, N. Battaglia, E. S. Battistelli, D. Bizyaev, J. R. Bond, H. Brewington, J. Brinkmann, B. R. Brown, S. Das, K. S. Dawson, M. J. Devlin, J. Dunkley, R. Dünner, D. J. Eisenstein, J. W. Fowler, M. B. Gralla, A. Hajian, M. Halpern, M. Hilton, A. D. Hincks, R. Hlozek, J. P. Hughes, L. Infante, K. D. Irwin, A. B. Kosowsky, Y.-T Lin, E. Malanushenko, V. Malanushenko, T. A. Marriage, D. Marsden, F. Menanteau, K. Moodley, M. D. Niemack, M. R. Nolta, D. Oravetz, L. A. Page, N. Palanque-Delabrouille, K. Pan, E. D. Reese, D. J. Schlegel, D. P. Schneider, N. Sehgal, A. Shelden, J. Sievers, **C. Sifón**, A. Simmons, S. Snedden, D. N. Spergel, S. T. Staggs, D. S. Swetz, E. R. Switzer, H. Trac, B. A. Weaver, E. J. Wollack, C. Yeche, C. Zunckel, **“Detection of Galaxy Cluster Motions with the Kinematic Sunyaev-Zel’dovich Effect”**, 2012, arXiv:1203.4219, accepted for publication in Phys. Rev. Letters
3. **C. Sifón**, F. Menanteau, M. Hasselfield, T. A. Marriage, J. P. Hughes, L. F. Barrientos, J. González, L. Infante, G. E. Addison, A. J. Baker, N. Battaglia, J. R. Bond, S. Das, M. J. Devlin, J. Dunkley, R. Dünner, M. B. Gralla, A. Hajian, M. Hilton, A. D. Hincks, A. B. Kosowsky, D. Marsden, K. Moodley, M. D. Niemack, M. R. Nolta, L. A. Page, B. Partridge, E. D. Reese, N. Sehgal, J. Sievers, D. N. Spergel, S. T. Staggs, R. J. Thornton, H. Trac, E. J. Wollack, **“The Atacama Cosmology Telescope: Dynamical Masses and Scaling Relations for a Sample of Massive Sunyaev-Zel’dovich Effect Selected Galaxy Clusters”**, 2012, arXiv:1201.0991, submitted to ApJ

Refereed Papers

2. E. D. Reese, T. Mroczkowski, F. Menanteau, M. Hilton, J. Sievers, P. Aguirre, J. W. Appel, A. J. Baker, J. R. Bond, S. Das, M. J. Devlin, S. R. Dicker, R. Dünner, T. Essinger-Hileman, J. W. Fowler, A. Hajian, M. Halpern, M. Hasselfield, J. C. Hill, A. D. Hincks, K. M. Huffenberger, J. P. Hughes, K. D. Irwin, J. Klein, A. Kosowsky, Y. Lin, T. A. Marriage, D. Marsden, K. Moodley, M. D. Niemack, M. R. Nolta, L. A. Page, L. Parker, B. Partridge, F. Rojas, N. Sehgal, **C. Sifón**, D. N. Spergel, S. T. Staggs, D. S. Swetz, E. R. Switzer, R. Thornton, H. Trac, E. J. Wollack, **“The Atacama Cosmology Telescope: High-Resolution Sunyaev-Zel’dovich Array Observations of ACT SZE-selected Clusters from the Equatorial Strip”**, 2012, ApJ, 751, 12

1. F. Menanteau, J. P. Hughes, **C. Sifón**, M. Hilton, J. González, L. Infante, L. F. Barrientos, A. J. Baker, J. R. Bond, S. Das, M. J. Devlin, J. Dunkley, A. Hajian, A. D. Hincks, A. Kosowsky, D. Marsden, T. A. Marriage, K. Moodley, M. D. Niemack, M. R. Nolta, L. A. Page, E. D. Reese, N. Sehgal, J. Sievers, D. N. Spergel, S. T. Staggs, E. J. Wollack, **“The Atacama Cosmology Telescope: ACT-CL J0102–4915 “El Gordo,” A Massive Merging Cluster at Redshift 0.87”**, 2012, *ApJ*, 748, 7

Abstracts & Conference Proceedings

3. Miller, C. J., Gómez, P. L., **Sifón, C.**, Ingraham, P. J., Colberg, J., Morrison, G., Miller, N. A., Owen, F. N., **“The Abell 1882 Supergroup: Star-Formation and AGN Activity at the Moment of Collapse”**, 2010, *Bull. of the Am. Ast. Soc.*, 42, No. 3, 418.01
2. Gómez, P. L., Miller, C. J., **Sifón, C.**, Ingraham, P. J., **“X-ray and Optical Analysis of the Abell 1882 Super Group of Galaxies”**, 2010, *Bull. of the Am. Ast. Soc.*, 42, No. 2, 34.05
1. Gómez, P. L., Miller, C. J., Ingraham, P. J., **Sifón, C.**, **“Dynamical Analysis of the Abell 1882 Super Group of Galaxies”**, 2010, *Bull. of the Am. Ast. Soc.*, 42, No. 1, 351.03