

# *Santiago González Gaitán*

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Birth: April 12, 1980, Bogotá, Colombia  
Nationality: Colombian

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## Academic Degrees

- 2006 - 2011: **Doctor of Philosophy** (Astrophysics), University of Toronto. Thesis entitled “Supernova Rates, Rise-Times and Relation to their Progenitors”. Supervised by R. Carlberg. External defence referee: Brian Schmidt.
- 2003 - 2005: **Master of Physics**, Universidad de los Andes, Bogotá. Thesis entitled “Test of Diffractive Models at the Tevatron”. Supervised by C. Ávila.
- 1999 - 2003: **Bachelor of Physics**, Universidad de los Andes, Bogotá. Thesis entitled “Study of the Evidences provided by Supernovae Type Ia for a Universe governed by Dark Energy”. Supervised by J. P. Negret.

## Research Appointments

- 2012 - present: **FONDECYT Postdoctoral Fellow**, Departamento de Astronomía, Universidad de Chile.
- 2011 - 2012: **Postdoctoral Researcher** for the Millennium Center for Supernova Science, Departamento de Astronomía, Universidad de Chile

## Prizes and Honours

- 2010: **Doctoral Completion Award** granted by the School of Graduate Studies, University of Toronto.
- 2003: **Honours B.Sc. Degree**. GPA 4.5/5.0
- 2003: **Third Prize “Laserna”** for best **B.Sc. Thesis Project**.

## Observing Experience

- February 2015: **DECam at Blanco 4m telescope**, Cerro Tololo, Chile.
- March 2013: **DECam at Blanco 4m telescope**, Cerro Tololo, Chile.
- November 2012: **EFOSC2 and SOFI at NTT-3.6m**, La Silla Observatory, Chile.
- May 2012: **LDSS3 at Clay-6.5m**, Las Campanas Observatory, Chile.

- November 2011: **SOI and Goodman at SOAR-4.1m**, Cerro Pachón, Chile, remote observations.
- November 2006, January 2007, February 2012: **LDSS3 and IMACS at Magellan-6.5m** in Las Campanas Observatory, Chile.
- November 2009: **GMOS at 8.1m Gemini South**, Cerro Pachón, Chile.

## Instrumentation Experience

- 2011 - 2013: **CATA500 robotic 50cm telescope** at Cerro Tololo, Software automation, remote and on-site observations, instrumentation and data reduction (PI José Maza).
- January - July 2005: **D0 Detector, Fermilab accelerator**, Batavia, IL, USA, Research Internship for Master Completion.
- July 2002: **D0 Detector, Fermilab accelerator**, Batavia, IL, USA, Research Internship.
- May 1996: **DESY accelerator**, Hamburg, Germany, High School Internship.

## Teaching Experience

- May 2013 and September 2014: **Invited High School Physics Teacher** (9-11 grade) at The English School, Bogotá, Colombia.
- September 2010 - August 2011: **Planetarium Assistant** at University of Toronto.
- January 2006 - August 2011: **Teaching Assistant** (tutorial and marking) at University of Toronto.
- July - August 2005: **Teacher** at Universidad de los Andes, Bogotá. Undergraduate Physics course.
- January 2002 - December 2004: **Teaching Assistant** at Universidad de los Andes, Bogotá. Physics Laboratories and Physics Courses.
- 2000-2005: **Private tutoring** for high-school and undergraduate Math and Physics courses.

## Student Supervision

- June 2015 - present: **Reddening inferred from IFU studies**, co-supervision of PhD project for A. Razza, Universidad de Chile.
- January 2012 - present: **Reddening and Hubble Diagrams of type II SNe**, co-supervision of PhD project for T. De Jaeger, Universidad de Chile.

- January 2012 - present: **Principal Component Analysis of type II SNe spectra**, co-supervision of PhD project for C. Gutiérrez, Universidad de Chile.
- 2013 - 2014: **SN2010ev: a highly reddened SNIa with high-velocity gradient**, co-supervision of small PhD research project for C. Gutiérrez, Universidad de Chile.
- 2012 - 2014: **Colors and spectral signatures of CSM interaction in SNe Ia**, co-supervision of projects for master students S. Marchi and S. Marino, Universidad de Chile.
- 2014: **Photometric identification of peculiar type Ia at high-z**, co-supervision of undergraduate semester project for student F. Lagos.
- 2013: **Rise-times of Type II SNe**, co-supervision of undergraduate semester project for student J. Molina.

## Public Outreach

- August 20th 2014: **Radio Interview** at “W Radio” (Colombia) on the Moon ([link](#)).
- June 4th 2013: **Public Talk and Observing** at Casona Dubois, Santiago, Chile ([link](#)).
- May 28th 2013: **Radio Interview** at “Foro Ciudadano” (Chile) radio program on Supernovae ([link](#)).
- May 2012: **Outreach week** in Easter Island for the transit of Venus. Included talks at Museo Antropológico P. Sebastián Englert, activities at various schools in the island and viewing of transit of Venus at Ahu Tahai with equipment such as solar glasses, solar telescopes ([link](#)).
- January 2006 -August 2011: **Telescope Operator, Planetarium Guide and Speaker** at University of Toronto Public Tours.
- October 2009: **Public Talk** at the University of Toronto Workshops for Inter-Discipline Exchange and Novelty.

## Research Collaborations

- 2014-present: **MAS**, member of the Millennium Institute of Astrophysics (MAS, PI: M. Hamuy).
- 2014-present: **KSP**, member of the KMTNet supernova project (KSP, PI: Dae-Sik Moon)
- 2014-present: **SUDSS**, participant of the Survey Using Decam for Superluminous Supernovae (SUDSS, PI: M. Sullivan)
- 2012-present: **PESSTO**, member of the Public Spectroscopic Survey of Transient Objects (PESSTO, PI: S. Smartt, M. Sullivan).

- 2012-present: **CSP**, participant of the Carnegie Supernova Project (CSP, PI: M. Phillips).
- 2011-present: **CHASE**, member of the Chilean Automatic Supernova Search (CHASE, PI: G. Pignata).
- 2011-2013: **MCSS**, member of the Millennium Center for Supernova Studies (MCSS, PI: M. Hamuy).
- 2006-2011: **SNLS**, participant of the Supernova Legacy Survey (SNLS, Co-PI: R. Carlberg).

## Other Responsibilities

- December 2014 - January 2015: **President of the Organizing Committee** for the Symposium for Postdocs SYPO of the Millennium Institute for Astrophysics MAS.
- 2013-present: **Co-organizer** of the supernova clubs (SN-club) talks in Santiago, Chile.
- 2014: **Referee** of two MNRAS papers.
- December 2013 - January 2014: **Member of Selection Committee** for postdoctoral researchers for MCSS/MAS.
- 2012 - 2013: **Postdoctoral vice-representative** at Calan, Universidad de Chile.
- 2008 - 2010: **Treasurer** of the Graduate Astronomy Student Association GASA of the Astronomy Department at the University of Toronto.

## References

- Mario Hamuy: [mhamuy@das.uchile.cl](mailto:mhamuy@das.uchile.cl)
- Ray Carlberg: [carlberg@astro.utoronto.ca](mailto:carlberg@astro.utoronto.ca)
- Andy Howell: [ahowell@lcogt.net](mailto:ahowell@lcogt.net)
- Mark Sullivan: [m.sullivan@soton.ac.uk](mailto:m.sullivan@soton.ac.uk)
- Carlos Ávila: [cavila@uniandes.edu.co](mailto:cavila@uniandes.edu.co)

## Languages

- Spanish: Written and Spoken
- French: Written and Spoken
- German: Written and Spoken
- English: Written and Spoken
- Portuguese: Basic

## Computational Skills

- Operating Systems: Linux, Mac, Windows
- Languages: IDL, C++, Fort
- Astronomy: IRAF, SNID, SYNOW, UNIVIEW

## Publication list

### Refereed Articles

1. *The rise times of type II supernovae.* **González-Gaitán, S.**, Tominaga, N.; Molina, J.; Galbany, L. et al. 2015, MNRAS, 451, 2212.
2. *SN 2011A: A low-luminosity interacting transient, with a double plateau and strong sodium absorption.* de Jaeger, T.; Anderson, J.P.; Pignata G.; Hamuy, M. et al. 2015, ApJ, 807, 63.
3. *Searching for light echoes due to CSM in SN Ia spectra.* Marino, S.; **González-Gaitán, S.**, Förster, F.; Folatelli, G. et al. 2015, ApJ, 806, 134.
4. *Nebular phase observations of the type-Ib supernova iPTF13bvn favour a binary progenitor.* Kuncarayakti, H.; Maeda, K.; Bersten, M.C.; Folatelli, G. et al. 2015, A&A, 579, 95.
5. *Strong near-infrared carbon in the Type Ia supernova iPTF13ebh.* Hsiao, E.Y.; Burns, C.R.; Contreras, C.; Höflich, P. et al. 2015, A&A, 578, 9.
6. *PESSTO: survey description and products from the first data release by the Public ESO Spectroscopic Survey of Transient Objects.* Smartt, S.J.; Valenti, S.; Fraser, M.; Inserra, C. et al. 2015, A&A, 579, 40.
7. *On the environments of type Ia supernovae within host galaxies.* Anderson, J.P.; James, P.A.; Förster, F.; **González-Gaitán, S.** et al. 2015, MNRAS, 448, 732.
8. *Defining photometric peculiar type Ia supernovae.* **González-Gaitán, S.**; Hsiao, E.Y.; Pignata, G.; Förster, F. et al. 2014, ApJ, 795, 142.
9. *Analysis of blueshifted emission peaks in Type II supernovae.* Anderson, J.P.; Dessart, L.; Gutierrez, C.P.; Hamuy, M. et al. 2014, MNRAS, 441, 617.
10. *H Spectral Diversity of Type II Supernovae: Correlations with Photometric Properties.* Gutiérrez, C.P.; Anderson, J.P.; Hamuy, M.; **González-Gaitán, S.** et al. 2014, ApJ, 786L, 15.
11. *Characterizing the V-band Light-curves of Hydrogen-rich Type II Supernovae.* Anderson, J.P., **González-Gaitán, S.**; Hamuy, M.; Gutiérrez, C.P. et al. 2014, ApJ, 786, 67.
12. *SN 2011hs: a fast and faint Type Ib supernova from a supergiant progenitor.* Bufano, F.; Pignata, G.; Bersten, M.; Mazzali, P.A.; Ryder, S.D. et al. 2014, MNRAS, 439, 1807.

13. *PESSTO monitoring of SN 2012hn: further heterogeneity among faint type I supernovae.* Valenti, S.; Yuan, F.; Taubenberger, S.; Maguire, K. et al. 2014, MNRAS, 437, 1519.
14. *A statistical analysis of circumstellar material in Type Ia supernovae.* Maguire, K.; Sullivan, M.; Patat, F.; Gal-Yam, A. et al. 2013. MNRAS, 436, 222.
15. *On the Lira Law and the Nature of Extinction toward Type Ia Supernovae.* Förster, F.; **González-Gaitán, S.**; Folatelli, G.; Morrell, N. 2013. ApJ, 772, 19.
16. *Evidence for Asymmetric Distribution of Circumstellar Material around Type Ia Supernovae.* Förster, F.; **González-Gaitán, S.**; Anderson, J.P.; Marchi, S. et al. 2012, ApJ, 754, 21.
17. *Evolution in the Volumetric Type Ia Supernova Rate from the Supernova Legacy Survey.* Perrett, K.; Sullivan, M.; Conley, A.; **González-Gaitán, S.** et al. 2012. AJ, 144, 59.
18. *The Rise Time of Normal and Subluminous Type Ia Supernovae.* **González-Gaitán, S.**; Conley, A.; Bianco, F.B.; Howell, D.A. et al. 2012. ApJ, 745, 44.
19. *Constraining Type Ia Supernovae progenitors from three years of SNLS data.* Bianco, F.B.; Howell, D.A.; Sullivan, M.; Conley A. et al. 2011, ApJ, 741, 20.
20. *Photometric selection of Type Ia supernovae in the Supernova Legacy Survey.* Bazin, G.; Ruhlmann-Kleider, V.; Palanque-Delabrouille, N.; Rich, J. et al. 2011, A&A, 534A, 43.
21. *SNLS3: Constraints on Dark Energy Combining the Supernova Legacy Survey Three-year Data with Other Probes.* Sullivan, M.; Guy, J.; Conley, A.; Regnault, N. et al. 2011, ApJ, 737, 102.
22. *Subluminous Type Ia Supernovae at High Redshift from the Supernova Legacy Survey.* **González-Gaitán, S.**; Perrett, K.; Sullivan, M.; Conley, A. et al. 2011. ApJ, 741, 20.
23. *Supernova constraints and systematic errors from the first 3 years of the Supernova Legacy Survey.* Conley, A.; Guy, J.; Sullivan, M.; Regnault, N. et al. 2011, ApJS, 192, 1.
24. *Results from the Supernova Photometric Classification Challenge.* Kessler, R.; Bassett, B.; Belov, P.; Bhatnagar, V. et al. 2010, PASP, 122, 1415.
25. *The Supernova Legacy Survey 3-year sample: Type Ia Supernovae photometric distances and cosmological constraints.* Guy, J.; Sullivan, M.; Conley, A.; Regnault, N. et al. 2010, A&A, 523A, 7.

## Submitted Articles

1. *A comparative study of Type II-P and II-L supernova rise times as exemplified by the case of LSQ13cww.* Gall, E.E.E.; Polshaw, J.; Kotak, R.; Jerkstrand, A. et al. Submitted to A&A.

## Non-Refereed Articles

1. *Test of Diffractive Models at the Tevatron.* **González-Gaitán, S.** & Avila, C., 2006, REVISTA COLOMBIANA DE FISICA, 38, 401.
2. *Study of the Evidences provided by the Supernovae type Ia for a Universe governed by Dark Energy.* **González-Gaitán, S.**, 2004, REVISTA COLOMBIANA DE FISICA, 36, 192.
3. *Measurement of D0 Experiment in Diffractive Physics.* C. Avila et al., 2006, REVISTA COLOMBIANA DE FISICA, 38, 966.

## Astronomical Communications

- Central Bureau for Astronomical Telegrams (CBET): 3860, 3858 (2014), 3753 (2013), 3326, 3325, 3324, 3323, 3322, 3031 (2012), 2872 (2011)
- Astronomer's Telegram (ATel): 7335, 7291, 7290, 7289, 7246, 7221, 7164, 7162, 7154, 7149, 7148, 7146, 7144, 7132, 7131, 7108, 7099 (2015), 6622, 6620, 6618, 6612, 6570, 6080, 6014, 5956, 5949 (2014), 5650 (2013), 4594, 4576, 4575, 4571, 4558, 4553, 4550, 4545 (2012)

## Proceedings

1. *A new photometric typing technique for peculiar type Ia supernovae.* **González-Gaitán, S.** 2014. Statistical Challenges of 21st Century Cosmology.
2. *Spectral analysis of type II Supernovae.* Gutiérrez, C.P.; Anderson, J.P.; Hamuy, M.; **González-Gaitán, S.** et al. 2014. RMxAC, 44, 111.
3. *Photometric Subluminous Type Ia Supernovae.* **González-Gaitán, S.**, 2014. RMxAC, 44, 44.
4. *Subluminous Type Ia Supernovae in the Supernova Legacy Survey.* **González-Gaitán, S.**; Howell, D.A.; Sullivan, M.; Conley, A. et al. 2006. AAS, 20915014.

## Meetings, Conferences and Workshops

- July 2015: *New perspectives into supernova cosmology.* Talk, Alpine Cosmology Workshop, Austria.
- July 2015: *The rise-time of type II supernovae.* Talk, Stellar End Products (STEPS) conference, Garching, Germany.
- June 2015: *Searching for light-echoes in SNIa spectra.* Poster, European Week of Astronomy and Space Science (EWASS) conference, Tenerife, Spain.
- June 2015: *The rise-time of type II supernovae.* Talk, EWASS conference, Tenerife, Spain.
- June 2015: *Subluminous SNe Ia near and far.* Talk, PESSTO meeting, Paris, France.

- May 2015: *Is dark energy an artifact? The effects of UV colors in SNIa standardization.* Seminar talk, Departamento de Astronomía, Universidad de Chile, Chile.
- April 2015: *The rise-time of type II supernovae.* Talk, South American Supernovae (SAS), Chile.
- April 2015: *Searching for light-echoes in SNIa spectra.* Talk, South American Supernovae (SAS), Chile.
- March 2015: *The rise-time of type II supernovae.* Poster, XII Annual Meeting of Sociedad Chilena de Astronomía SOCHIAS, Chile.
- January 2015: *The rise-time of type II supernovae.* Talk, Symposium for Postdocs (SYPO) of Millennium Institute of Astrophysics (MAS), Santiago, Chile.
- August 2014: *A new photometric typing technique for normal and peculiar type Ia supernovae.* Poster, CAASTRO Supernovae in the Local Universe: Celebrating 10,000 days of Supernova 1987A, Coffs Harbour, Australia.
- May 2014: *Exploring Type Ia supernova cosmology with CMAGIC.* Poster, IAUS306 on Statistical Challenges in Cosmology in the 21st Century, Lisbon, Portugal.
- May 2014: *A new photometric typing technique for peculiar type Ia supernovae,* Seminar talk at Institut de Ciències de l'Espai, Universitat Autònoma de Barcelona (ICE/IEEC), Barcelona, Spain.
- January 2014: *Photometric identification of subluminescent and other peculiar SNe Ia.* Talk, XI Annual Meeting of Sociedad Chilena de Astronomía SOCHIAS, Chile.
- November 2013: *Defining photometric subluminescent SNe Ia.* Talk, XIV Latin American Regional IAU Meeting LARIM, Florianópolis, Brazil.
- September 2013: *SN IIP early lightcurves from SNLS/SDSS with analytical shock models.* Talk, SNII workshop: Observations meet Models, Universidad de Chile, Chile.
- August 2013: Participant, Third CMM Pucón Symposium, Pucón, Chile.
- June 2013: *Searching for light-echoes in SNe Ia spectra at 35-85 days.* Talk, UK-Chile Workshop, University of Oxford, Oxford, UK.
- June 2013: *The Rise Time of Plateau Supernovae.* Poster, Massive stars: From  $\alpha$  to  $\Omega$ , Rhodes, Greece.
- April 2013: *Searching for light-echoes in SNe Ia spectra at 35-85 days.* Poster, ESO Workshop on The deaths of stars and the lives of galaxies, European Southern Observatory, Santiago, Chile.
- December 2012: *Re-defining photometric subluminescent SNe Ia.* Talk, Kavli IPMU Focus Week for Supernovae near and far, Tokyo, Japan.
- October 2012: *New clues about progenitors of SNe Ia, Photometric subluminescent SNe Ia, Type Ia cosmology with CMAGIC.* Talk, Carnegie Supernova Project II Meeting, Carnegie Observatories, Pasadena, CA, USA.



- September 2012: Participant, PESSTO Meeting IV, IEEC, Barcelona, Spain.
- September 2012: *Re-defining photometric subluminous type Ia supernovae*. Poster, MPA/ESO/MPE Excellence Cluster Universe Conference on Supernovae Illuminating the Universe: from Individuals to Populations, Garching, Germany.
- January 2012: *Evidence for two low-stretch SNIa populations?*. Talk, CSP/MCSS Meeting, La Herradura, Chile.
- June 2010: *SN IIP photometric typing*. Talk, Progenitors and Environments of Stellar Explosions 2010, Institut d'Astrophysique de Paris, France
- October 2009: Participant, Novicosmo School 2009, Rabac, Croatia
- September 2009: *Rise-time of underluminous SNe Ia*. Poster, Stellar Death and Supernovae, Kavli Institute for Theoretical Astrophysics, Sta Barbara, CA, USA
- May 2009: *Rise-time of underluminous SNe Ia*. Poster, Canadian Astronomical Society CASCA, Toronto, Canada
- May 2008: *Rates of subluminous SNe Ia from the SNLS*. Poster, Canadian Astronomical Society CASCA, Victoria, Canada
- January 2007: *Subluminous Type Ia Supernovae in the Supernova Legacy Survey*. Poster, American Astronomical Society AAS, Seattle, USA
- October 2005: *Test of Diffractive Models at the Tevatron*. Talk, Congreso Nacional de Física, Barranquilla, Colombia
- October 2003: *Study of the Evidences provided by the Supernovae type Ia for a Universe governed by Dark Energy*. Talk, Congreso Nacional de Física (Talk), Armenia, Colombia

## Other Practical Experience:

Language Teacher (French, Spanish and German) and Translator (French, English, German to Spanish)

## Personal Interests:

Choir (Universidad de los Andes Coro Kinder, University of Toronto Hart House Singers, Coro Mozart), Sports (swimming, cycling, soccer, squash), Literature, Cinema