

Contact Information

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Education

Uppsala University, Sweden Astronomy Ph.D. 2009
Federal University of Rio de Janeiro, Brazil Astronomy B.Sc. 2003

Relevant Employment

Aug 2015	–	Assistant Professor	California State University, Northridge, CA
Aug 2015	–	Affiliate Scientist	NASA/JPL-Caltech, Pasadena CA
Dec 2011	– Jan 2015	NASA Carl Sagan fellow	NASA/JPL-Caltech, Pasadena CA
Nov 2009	– Dec 2011	Postdoctoral researcher	AMNH, New York NY
Apr 2009	– Oct 2009	Research assistant	MPIA, Heidelberg, Germany
Oct 2004	– Mar 2009	Graduate researcher	Uppsala University, Sweden
Jul 2003	– Jul 2004	Research assistant	CTIO, La Serena, Chile
Jun 2002	– Aug 2002	Summer research intern	STScI, Baltimore MD
Apr 2000	– Jul 2003	Undergraduate researcher	UFRJ, Rio de Janeiro, Brazil

Research Interests

Accretion disks: circumstellar, white dwarf, AGN disks; dynamical instabilities, magnetohydrodynamics, radiative transfer. **Planetary Sciences:** planet formation, disk-planet interaction, dynamics, icy moons, habitability. **Stellar astrophysics:** young stellar objects, stellar atmospheres. **Methods:** code development, supercomputing, grid-based schemes, particle-mesh.

Grants, Honors, and Awards

Grants

NASA Exoplanet Research Program	NASA-XRP (co-I share \$ 130k)	2018
National Radioastronomy Observatory (NRAO)	ngVLA (PI, \$ 81k)	2017
NASA Exoplanet Research Program	NASA-XRP (PI, \$ 250k)	2016
Space Telescope Science Institute	Hubble Cycle 24 (PI, \$ 134k)	2016
National Science Foundation	NSF-AAG (PI, \$ 461k)	2010

Honor & awards

Max Planck Society	Visiting professor	2018
Japanese Society for the Progress of Science	Visiting fellow	2015-2016
NASA Exoplanet Science Institute	Sagan Fellowship (\$ 309k)	2011-2014

Computer allocations

XSEDE	800k CPU hours (equiv \$4k)	2018
XSEDE	1M CPU hours (equiv \$40k)	2017
XSEDE	800k CPU hours (equiv \$ 30k)	2016
Teragrid	600k CPU hours (equiv \$ 22k)	2013

Other grants

American Physical Society	US-India Travel Grant Program (\$ 4k)	2018
International Astronomical Union	Office of Astronomy for Development (\$ 10k)	2017
California State University	Probationary Faculty Support Program (\$ 5k)	2016
American Museum of Natural History	Kalbfleisch postdoctoral fellowship	2009-2010
European Science Foundation	Grant for Pencil Code meeting (€ 5k)	2009
German Science Foundation (DFG)	Grant for Pencil Code meeting (€ 5k)	2009
Uppsala University	Håkansson foundation (10k SEK)	2008
	Liljwalchs foundation (10k SEK)	2007
	Anna & Allan Löfbergs fellowship	2004-2006
Brazilian Research Council	Undergraduate research grant	2000-2003

Teaching Experience

- CSUN
 - ASTR 301 Dynamical Astronomy. Fall 2018.
 - ASTR 401 Radiative Processes in Astrophysics. Spring 2016, Spring 2017, Spring 2018.
 - ASTR 601 Selected Topics in Astrophysics. Fall 2015, Fall 2017.
 - PHYS 389 Mathematical Methods in Physics I. Fall 2016.
- Moscow Institute of Theoretical Physics, Summer 2017, invited lecturer for 2-week course on protoplanetary disks for the 13th Summer School of Modern Astrophysics.
- American Museum of Natural History: Teacher on the Museum's After-School program, for courses *Stars - An introduction to Stellar Astrophysics* (2010) and *Secrets of the Solar System* (2011).
- Uppsala University: Teaching Assistantship for the following courses: Physics of the interstellar medium (2007), Stellar Physics (2007), Classical Mechanics (2008).
- Federal University of Rio de Janeiro: Tutoring for Astronomy Students in Statistics (2001), Electromagnetism (2002), Quantum Mechanics (2003).
- Guest lecturer in undergraduate courses: *Introduction to Modern Astronomy* at Federal University of Rio de Janeiro (Apr 2015), *Astrophysics* at University of Ottawa (Nov 2012), *Minor bodies of the solar system* and *Stellar Physics* at University of Uppsala (May 2006 and Sep 2008, respectively).

Experience as Supervisor

- Postdocs (3): Ana Maria Piso, Natalia Dzyurkevich, and Luca Ricci.
- Ph.D. students (4, co-advisor): Alexander Richert (Penn State University), Debanjan Segupta (University of Delaware), Natalie Raettig (University of Heidelberg), Brandon Horn (Columbia University).

- M.Sc. students (7): Christopher Malek, Joshua Shevchuk, Leonardo Sattler-Cassara, Areli Castrejon, Vincent Carpenter, Amanda Rowen, Alexandra Yep.
- Undergraduates (7): Joshua Shevchuk, Christopher Malek, Gabriel Bretado, Areli Castrejon, Sean Snyder, Heidar Thrastarson, Peter Schmidt.
- Summer undergraduate interns (3): Leonardo Sattler-Cassara, Joseph Cullen, Adam Ball.
- Summer high-school interns (1): Blake Hord.

Observational Experience

- Cerro Tololo Interamerican Observatory. Seventeen engineering nights at the 4m telescope scattered from oct/03 to jun/04 doing photometric observations of standard stars on JHK wavebands, to test Tololo's new infrared camera, ISPI. Observations were performed under supervision of CTIO staff Dr. Nicole S. van der Bliek and Dr. Dara Norman.
- Observatório do Pico dos Dias, Laboratório Nacional de Astrofísica, Brazil. Extensive experience using the 1.60m telescope at OPD/LNA, performing spectroscopic observations in optical wavelengths with a coude spectrograph. The dates when the observations took place were may/00, oct/00, jun/01, sep/01, oct/01, may/02, oct/02, dec/02.

Synergistic Activities

- **Conference organizer:**
 - SOC of Numerical Simulations of Planet-Disk Interactions, Cuernavaca, Mexico, 2017.
 - SOC of Exoplanets in Southern California (ExSoCal) 2017.
 - Co-chair of Phase Transitions in Astrophysics, Nordita, Stockholm, Sweden, 2017.
 - SOC of Exoplanets in Southern California (ExSoCal) 2016.
 - Co-organizer of Pencil Code Meeting 2010, New York, NY, USA.
 - Organizer of Pencil Code Meeting 2009, Heidelberg, Germany.
 - Organizer of Workshop "Turbulence-Assisted Planetary Growth", 2009, Uppsala, Sweden.
 - Member of LOC of Nobel Symposium 135: Physics of Planetary Systems, 2007, Stockholm, Sweden.
- **Computation:** Co-developer (since 2005) of the Pencil Code, a high-order finite-difference parallel code for MHD turbulence.
- **Panels:** Review panel member for NSF and NASA. External reviewer for Hungarian Academy of Sciences.
- **Journal reviewer:** Referee for Astronomy & Astrophysics, Monthly Notices of the Royal Astronomical Society, Astrophysical Journal, Planetary and Space Sciences.

Other skills

Programming proficiency: Fortran 90, Python, IDL, HTML (fluent); C, Awk, Linux/C-shell, IRAF (good). Operating systems: GNU/Linux, Mac OS X.

Language Proficiency: Portuguese (native speaker); English, Spanish (fluent); Swedish, French (conversational); German, Italian, Danish, Norwegian (reading).

Publication List

Summary:

- Total publication count: **43 refereed publications** (articles in Nature and the Journal of Fluid Mechanics in addition to ApJ, MNRAS, A&A, AJ, PASA, PASP, and AN.).
- First or second author: 28 referred articles. **17 as first author**, 11 as second (8 of which student-led, marked with a blue star ^{*}).
- **h-index: 26, cited over 1700 times**. First author h-index: 14, cited over 800 times.
- Rate of publication: **3.14 yr⁻¹** total, **1.93 yr⁻¹** as first or second author, **1.21 yr⁻¹** as first author.

Articles currently in review

48. Dust traps in the protoplanetary disc MWC 758: two vortices produced by two giant planets? Baruteau, C., Barraza, M., Pérez, S., Casassus, S., Dong, R., **Lyra, W.**, Marino, S., Zhu, Z., Christiaens, V., Carmona, A., Alarcon, F., 2018, MNRAS, submitted.
47. Orbital Migration of Interacting Stellar Mass Black Holes in Disks around Supermassive Black Holes. Secunda, A., Bellovary, J., Mac Low, M.-M., Ford, K. E. S., McKernan, B., Leigh, N., & **Lyra, W.** 2018, ApJ, submitted.
46. ^{*} Coupling Europa's thermal state and surface topography: 2D and 3D simulations of tidally driven convection. Sattler-Cassara, L. & **Lyra, W.** 2018, Icarus, submitted.
45. Explaining transition disks with accretionally dead zones Sandor, Zs., **Lyra, W.**, & Regaly, Zs. 2017, A&A, submitted.

Research Notes

44. Pebble-trapping Backreaction Does Not Destroy Vortices Lyra, W, Raettig, N., Klahr, H. 2018, RNAAS, 2, 195.

Articles in press

43. Cm-wavelength observations of MWC758: resolved dust trapping in a vortex and intra-cavity signal. Casassus, S., Marino, S., **Lyra, W.**, Vidal, M., Wootten, A., Baruteau, C., Perez, S., Alarcon, F., Barraza, M., Carcamo, M., Dong, R., Zhu, Z., Ricci, L., Christiaens, V., & Cieza, L. 2018, MNRAS, accepted.
42. The initial conditions for planet formation: Turbulence driven by hydrodynamical instabilities in protoplanetary disk Ohmic zone. **Lyra, W.** & Umurhan, O. 2018, PASP review, accepted.

Published refereed articles

41. Fast spectrophotometry of WD1145+017.
Izquierdo, P., Rodriguez-Gil, P., Gansicke, B., Mustill, A.J., Tremblay, P.E., Wyatt, M., Chote, P., Eggl, S., Farihi, J., **Lyra, W.**, Manser, C.J., Marsh, T.R., Palle, E., Raii, R., Veras, D., Villaver, E., Portegies Zwart, S. 2018, MNRAS, 481, 703.
40. Constraining Stellar-mass Black Hole Mergers in AGN Disks Detectable with LIGO
McKernan, B., Ford, K. E. S., Bellovary, J., Leigh, N.W.C., Haiman, Z., Kocsis, B., **Lyra, W.**, MacLow, M.-M., Metzger, B., O'Dowd, M., Endlich, S., Rosen, D.J. 2018, ApJ, 866, 66.
39. * The interplay between radiation pressure and the photoelectric instability in optically thin disks of gas and dust
Richert, A., **Lyra, W.**, & Kuchner, M. 2018, ApJ, 856, 41.
38. On the rate of black hole mergers in galactic nuclei and active galactic nucleus disks II. Dynamical hardening
Leigh, N.W.C, Geller, A.M., McKernan, B., Ford, K.E.S., Bellovary, J., Endlich, S., Haiman, Z., Kocsis, B., **Lyra, W.**, Mac Low, M.-M., Metzger, B., O'Dowd, M., Samsing, J., & Stone, N.C. 2017, MNRAS, 474, 5672.
37. Radiation hydrodynamical turbulence in protoplanetary disks: Numerical models and observational constraints
Flock, M., Nelson, R., Turner, N., Bertrang, G., Carrasco-Gonzalez, C., Henning, Th., **Lyra, W.**, & Teague, R. 2017, ApJ, accepted.
36. * On shocks driven by high-mass planets in radiatively inefficient disks. III. Observational signatures in thermal emission and scattered light
Hord, B., **Lyra, W.**, Turner, N., Flock, M., & Mac Low, M.-M. 2017, ApJ, 849, 164.
35. Low mass planet migration in magnetically torqued dead zones I: Static migration torque
McNally, C.P., Nelson, R. P., Paardekooper, S.-J., Gressel, O., & **Lyra, W.** 2017, MNRAS, 472, 1565.
34. Orbital advection with magnetohydrodynamics and vector potential
Lyra, W., McNally, C.P., Heinemann, T., & Masset, F. 2017, AJ, 154, 146.
33. Grand challenges in protoplanetary disc modelling.
Haworth, T.J, Ilee, J. D., Forgan, D. H. , Facchini, S., Price D. J.; Community authors: Boneberg, D. M. , Booth, R. A., Clarke, C. J., Gonzalez, J.-F., Hutchison, M. A., Kamp, I., Laibe, G., **Lyra, W.**, Meru, F., Mohanty S., Panic, O., Rice, K., Suzuki, T., Teague, R., Walsh, C., Woitke, P. 2016, PASA, accepted.
32. On shocks driven by high-mass planets in radiatively inefficient disks. II. Three-dimensional global disk simulations.
Lyra, W., Richert, A.J.W., Boley, A., Turner, N., Mac Low, M.-M., Okuzumi, S., & Flock, M. 2016, ApJ, 817, 102.
31. Compact dust concentration in the MWC 758 protoplanetary disk
Marino, S., Casassus, S., Perez, S., **Lyra, W.**, Roman, P.E., Avenhaus, H., Wright, C.M., & Madison, S.T. 2015, ApJ, 813, 76.
30. * On shocks driven by high-mass planets in radiatively inefficient disks. I. Two-dimensional global disk simulations.
Richert, A.J.W., **Lyra, W.**, Boley, A.C., Mac Low, M.-M. & Turner, N. 2015, ApJ, 804, 95.

29. * Particle trapping and streaming instability in vortices in protoplanetary disks.
Raettig, N., Klahr H., & **Lyra, W.** 2015, ApJ, 804, 35.
28. CSI 2264: Characterizing Young Stars in NGC 2264 with Short-Duration, Periodic Flux Dips in their Light Curves
Stauffer, J., Cody, A.-M., McGinnis, P., Rebull, L., Hillenbrand, L.A., Turner, N.J., Carpenter, J., Plavchan, P., Carey, S., Terebey, S., Calderon, M. M., Alencar, S.H.P, Bouvier, J., Venuti, L., Hartmann, L., Calvet, N., Micela, G., Flaccomio, E., Song, I., Gutermuth, R., Barrado, B., Vrba, F.J., Covey, K., Padgett, D., Herbst, W., Gillen, E., **Lyra, W.**, Guimaraes, M. M., Bouy, H., & Favata, F. 2015, AJ, 149, 130.
27. Rossby wave instability does not require sharp resistivity gradients.
Lyra, W., Turner, N.J., McNally, C.P. 2015, A&A, 574, A10.
26. Convective overstability in accretion disks: 3D Linear analysis and nonlinear saturation.
Lyra, W. 2014, ApJ, 789, 77.
25. Intermediate mass black holes in AGN disks II. Model predictions and observational constraints.
McKernan, B., Ford, K.E.S., Kocsis, B. **Lyra, W.**, Perets H.B., & Winter, L.M. 2014, MNRAS, 441, 900.
24. Steady state of dust distributions in disk vortices: Observational predictions and applications to transitional disks.
Lyra, W. & Lin, M.-K. 2013, ApJ, 775, 17
23. Formation of sharp eccentric rings in debris disks with gas but without planets.
Lyra, W. & Kuchner, M.J. 2013, Nature, 499, 184
22. * A parameter study for baroclinic disk instability.
Raettig, N., **Lyra, W.**, & Klahr, H. 2012, ApJ, 765, 115
21. Rossby wave instability at dead zone boundaries in 3D resistive magnetohydrodynamical models of protoplanetary disks.
Lyra, W. & Mac Low, M.-M. 2012, ApJ, 756, 62
20. Intermediate mass black holes in AGN disks I. Production & growth.
McKernan, B., Ford, K.E.S. **Lyra, W.**, & Perets, H. B. 2012, MNRAS, 425, 460.
19. * A well-posed Kelvin-Helmholtz instability test and comparison.
McNally, M. **Lyra, W.**, & Passy, J.-C. 2012, ApJ Suppl, 201, 18.
18. On the connection between the magneto-rotational and magneto-elliptic instabilities.
Mizerski, K.A. & **Lyra, W.** 2012, Journal of Fluid Mechanics, 698, 358.
17. * Orbital migration of interacting low-mass planets in evolutionary radiative turbulent models.
Horn, R. B., **Lyra, W.**, Mac Low, M.-M., & Sándor, Zs. 2012, ApJ, 750, 34.
16. On rapid migration and accretion within disks around supermassive black holes.
McKernan, B., Ford, K.E.S., **Lyra, W.**, Perets, H.B., Winter, & L.M., Yaqoob, T. 2011, MNRAS, 417L, 103.

15. Meridional circulation in turbulent protoplanetary disks.
Fromang, S., **Lyra, W.**, & Masset, F. 2011, *A&A*, 534, 107
14. Formation of planetary cores at Type I migration traps.
Sandor, Zs., **Lyra, W.**, & Dullemond, C. 2011, *ApJ*, 728L, 9
13. The baroclinic instability in the context of layered accretion. Self-sustained vortices and their magnetic stability in local compressible unstratified models of protoplanetary disks.
Lyra, W. & Klahr, H. 2011, *A&A*, 527, 138
12. Orbital migration of low-mass planets in evolutionary radiative models: Avoiding catastrophic infall.
Lyra, W., Paardekooper, S.-J., & Mac Low, M.-M. 2010, *ApJ*, 715, L68
11. Planet formation bursts at the borders of the dead zone in 2D numerical simulations of circumstellar disks.
Lyra, W., Johansen, A., Klahr, H. & Piskunov, N. 2009 *A&A*, 497, 869
10. Turbulent stresses as a function of shear rate in a local disk model.
Liljeström, A. J., Korpi, M. J., Käpylä, P. J., Brandenburg, A. & **Lyra, W.** 2009, *AN*, 330, 92
9. Standing on the shoulders of giants: Trojan Earths and vortex trapping in low-mass self-gravitating protoplanetary disks of gas and solids.
Lyra, W., Johansen, A., Klahr, H. & Piskunov, N. 2009, *A&A*, 493, 1125. *A&A* cover.
8. Embryos grown in the dead zone: Assembling the first protoplanetary cores in low-mass self-gravitating circumstellar disks of gas and solids.
Lyra, W., Johansen, A., Klahr, H., & Piskunov, N. 2008, *A&A*, 491, L41. *A&A* highlight.
7. The Alpha-Centauri binary system: Atmospheric parameters and element abundances.
Porto de Mello, G.F. **Lyra, W.**, & Keller, G.R.R. 2008, *A&A*, 488, 653
6. Global magnetohydrodynamical models of turbulence in protoplanetary disks.
I. A cylindrical potential on a Cartesian grid and transport of solids.
Lyra, W., Johansen, A., Klahr, H. & Piskunov, N. 2008, *A&A*, 479, 883.
5. Spiral structure of the Third Galactic Quadrant and the solution to the Canis Majoris debate.
Moitinho, A., Vázquez, R. A., Carraro, G., Baume, G., Giorgi, E.E., & **Lyra, W.** 2006, *MNRAS*, 368, 77.
4. A comparative study of disc-planet interaction.
de Val-Borro, M., Edgar, R., Artymowicz, P., Ciecielag, P., Cresswell, P., D'Angelo, G., Delgado-Donate, E., Dirksen, R.G., Fromang, S., Gawryszczak, A., Klahr, H., Kley, W., **Lyra, W.**, Masset, F., Mellema, G., Nelson, R., Paardekooper, S.-J., Peplinski, A., Pierens, A., Plewa, T., Rice, K., Schäfer, C., Speith, R. 2006, *MNRAS*, 370, 529
3. On the difference between nuclear and contraction ages.
Lyra, W., Moitinho, A., van der Blik, N. S., Alves, J. 2006 *A&A*, 453, 101.
2. A link between stellar metallicity and the semi-major axis of extrasolar planets.
Pinotti, R., Arany-Prado, L.I., **Lyra, W.** & Porto de Mello, G.F. 2005, *MNRAS*, 364, 29.
1. Fine structure of the chromospheric activity in Solar-type stars: The H α line.
Lyra, W. & Porto de Mello, G.F. 2005, *A&A*, 431, 329.

Oral Communications

Summary: 13 invited talks in international conferences, 57 seminars and invited colloquia, 28 contributed talks, totalling 98 oral communications.

Invited talks and reviews

13. "Planet signatures in Transition Disks". Invited talk at *2018 Sagan-Michelson fellows symposium*, Pasadena, CA, Nov 8-9, 2018.
12. "Hydrodynamical instabilities in the Ohmic dead zone in circumstellar disks and dwarf novae." Invited talk at *Confronting MHD Theories of Accretion Disks with Observations*, Kavli Institute for Theoretical Physics, Santa Barbara CA, Feb 28, 2017.
11. "How shocks driven by high-mass planets can explain the spirals seen in transition disks." Invited talk at *Exoplanets and Disks: Their formation and diversity*, Ishigaki, Okinawa, Japan, Feb 21-24, 2016.
10. "How shocks driven by high-mass planets can explain the spirals seen in transition disks." Invited talk at *Protoplanetary Disk Dynamics and Planet Formation*, JAMSTEC, Tokyo, Japan, Sep 29-Oct 2, 2015.
9. "Gas dynamics in circumstellar disks: planet signatures and dynamical instabilities." Invited review at *3rd DTA Symposium - The origins of planetary systems: from the current view to new horizons*, NAOJ, Tokyo, Japan, Jun 1-4, 2015.
8. "Rossby wave instability in MHD: inner and outer MRI-active/dead zone boundaries." Invited talk at *The Magneto-Rotational Instability confronts the observations*, Ringberg Castle, Bavaria, Germany, Apr 13-17, 2015.
7. "Non-axisymmetric structures in transition disks: dynamical instabilities without planets?" Invited talk at *Transition Disks and Planet Formation*, Leiden, The Netherlands, Mar 2-6, 2015.
6. "Gas in debris disks: a new way to produce patterns?" invited talk at *Thirty years of beta Pic and debris disk studies*, Paris, France, Sep 8-12, 2014.
5. "Gas in debris disks: a new way to produce patterns?" invited talk at *2012 Sagan/Michelson Fellows Symposium*, Pasadena, Nov 8-9, 2012.
4. "Elliptic and magneto-elliptic instabilities", invited review at meeting *Instabilities and structures in protoplanetary disks*, Marseilles, France, 17-20 September, 2012.
3. "Dynamics of the turbulent solar nebula", invited review at workshop *Dynamics and formation of the Oort Cloud*, Lille Observatory, Lille, France, 27-30 September 2011.
2. "The baroclinic instability in protoplanetary disks", invited talk at *Ringberg workshop on Geophysical and Astrophysical fluid flow: Baroclinic instability and protoplanetary accretion disks*, Ringberg Castle, Bavaria, Germany, 14-18 June 2011.
1. "The dramatic role of magnetic fields in the Solar Nebula", invited review at workshop *Energy transfer and conversion inside magnetospheres*, Uppsala, Sweden, May 23 2008.

Invited seminars and colloquia

57. Caltech, Nov 2018.
56. University of Nevada, Las Vegas, Nov 2018.
55. California State University, Long Beach, Oct 2018.
54. Interdisciplinary Research Institute for the Sciences, CSUN, Oct 2018.
53. Lund University, Seminar, Lund, Sweden, Aug 2018.
52. MPA, PSF Coffee, Heidelberg, Germany, Aug 2018.
51. University of Heidelberg, Germany, Jul 2018.
50. Nicolaus Copernicus Center for Astronomy, Warsaw, Poland, Jul 2018.
49. California State University, Los Angeles, Jan 2018.
48. JPL journal club, Oct 2017.
47. Pennsylvania State University, Sep 2017.
46. Observatório Nacional, Rio de Janeiro, Brazil, Aug 2017.
45. ASIAA, TIARA seminar, Taipei, Taiwan, July 2017.
44. Academia Sinica Institute for Astronomy and Astrophysics (ASIAA); colloquium, Taipei, Taiwan, July 2017.
43. Eotvos Loránd University, Budapest, Hungary, Jun 2017.
42. Uppsala University, May 2017.
41. University of California at San Diego, Apr 2017.
40. University of Hawaii, Apr 2017.
39. University of Delaware, Apr 2017, seminar.
38. University of Delaware, Apr 2017, colloquium.
37. Observatorio Calán, Santiago, Chile, Jan 2017.
36. Pontificia Universidad Católica, Santiago, Chile, Jan 2017.
35. University of California at Santa Cruz, Nov 2016.
34. San Francisco State University, Oct 2016.
33. MPA, PSF Coffee, Heidelberg, Germany, Jun 2016.
32. Planetary Sciences Colloquium, Caltech, Apr 2016.
31. Nagoya University, Seminar, Nagoya, Japan, Dec 2015.
30. Yuk Lunch, Caltech, Nov 2015.

29. California State University, Fullerton, Oct 2015.
28. NAOJ, Tokyo, Japan, seminar, Jun 2015.
27. UFRJ, Rio de Janeiro, Brazil, seminar, May 2015.
26. JPL Science Visitor and Colloquium Program, Pasadena CA, May 2015.
25. Princeton University, Princeton NJ, May 2015.
24. NASA Goddard Space Flight Center, Greenbelt MD, May 2015.
23. University of Amsterdam, Amsterdam, the Netherlands, Mar 2015.
22. Leiden Observatory, Leiden, the Netherlands, Mar 2015.
21. California State University, Northridge, Feb 2015.
20. Western Washington University, Bellingham WA, Geology Colloquium, Jan 2015.
19. Western Washington University, Bellingham WA, Physics Colloquium, Jan 2015.
18. Konkoly Observatory, Budapest, Hungary Nov 2014
17. UC Santa Barbara, AstroSeminar, Nov 2014
16. McGill University, Montreal, Special AstroSeminar, Sep 2014
15. UCLA, Institute for Planets and Exoplanets lunch seminar, May 2014
14. University of California at Berkeley, Seminar, Berkeley CA, Apr 2014
13. Nagoya University, Seminar, Nagoya, Japan, Mar 2014
12. Nordic Institute for Theoretical Physics, Seminar, Stockholm, Sweden, Nov 2013
11. JPL Exoplanet Science Seminar, Pasadena CA, Oct 2013
10. Lund University, Seminar, Lund, Sweden, Jun 2013
9. Carleton University, Physics colloquium series, Ottawa ON, Canada, Oct 2012
8. Université de Montréal, Seminar, Montréal QC, Canada, Sep 2012
7. Queen's University, Seminar, Kingston ON, Canada, Sep 2012
6. Caltech Infrared Processing and Analysis Center, Lunch seminar, Pasadena CA, Apr 2012
5. Cornell University, Seminar, Ithaca, NY, Feb 2011
4. NASA Goddard Space Flight Center, Seminar, Greenbelt MD, Dec 2010
3. Institute for Advanced Studies, Astro-coffee discussion, Princeton NJ, Dec 2010
2. American Museum of Natural History, Seminar day, New York NY, Nov 2009
1. Lund University, Seminar, Lund, Sweden, Mar 2009

Contributed talks

28. ExSoCal2018 - The 4th Annual Gathering of Southern California Exoplaneteers Caltech, Pasadena CA, Sept 17-18, 2018.
27. Numerical Simulations of Planet Disk Interaction, Cuernavaca, Mexico, Nov 23rd, 2017.
26. ExSoCal2017 - The 3rd Annual Gathering of Southern California Exoplaneteers Caltech, Pasadena CA, Sept 18-19, 2017.
25. Comet formation paradigm after Rosetta. Sofia, Bulgaria, Jun 19-23, 2017.
24. XV Latin American Regional IAU Meeting (LARIM), Cartagena de Indias, Colombia, Oct 3-7, 2016.
23. Pencil code user meeting 2016, Space Research Institute, Austrian Academy of Sciences, Graz, Austria, Aug 8-12, 2016.
22. Protoplanetary Discussions, Edinburgh, Scotland, UK, Mar 7-11, 2016 (cancelled participation).
21. ExSoCal2015 - An exoplanet orbital interaction, Caltech, Pasadena CA, Sept 24-25, 2015.
20. Disk dynamics and planet formation, Larnaka, Cyprus, Jun 29 - Jul 3, 2015 (cancelled participation).
19. Pencil code user meeting 2014, Max Planck Institute for Solar System Research, Göttingen, Germany, Jul 7-11, 2014.
18. Bay Area Exoplanet Meeting #9, SETI Institute, Mountain View, CA, Jun 6, 2014.
17. Exoplanets and disks: their formation and diversity II, Kona, Hawaii, Dec 8-12, 2013.
16. Pencil code user meeting 2013, Lund, Sweden, June 17-20, 2013.
15. Formation, detection, and characterization of extrasolar planets habitable planets, Beijing, China, Aug 27-31, 2012.
14. The origin of stars and their planetary systems, Hamilton, Canada, June 10-15, 2012, Annual meeting of the Canadian Astronomical Society, Calgary, Canada, June 05-07, 2012.
13. Pencil code user meeting 2011, Toulouse, France, Oct 24-28, 2011.
12. EPSC-DPS joint meeting 2011. Exoplanet and origins, Nantes, France, Oct 02-07, 2011.
11. Annual meeting of the Astronomical Society of New York, Rochester, NY, Apr 09, 2011.
10. Planet formation and evolution, Göttingen, Germany, Feb 14-16, 2011.
9. The Astrophysics of Planetary Systems: Formation, Structure, and Dynamical Evolution, Torino, Italy, Oct 11-15, 2010.
8. Pencil code user meeting 2010, New York, NY, Jul 26-30, 2010.
7. Pencil code user meeting 2009, Heidelberg, Germany, Aug 24-28, 2009.
6. Extrasolar planets in multibody systems, Toruń, Poland, Aug 25-29, 2008.

5. Turbulence and oscillations in accretion disks, Stockholm, Sweden, Oct 1-15, 2008.
4. Pencil code user meeting 2008, Leiden, The Netherlands, Aug 19-22, 2008.
3. Pencil code user meeting 2007, Stockholm, Sweden, Aug 14-17, 2007.
2. 9th MHD days, 2006, Heidelberg, Germany, Dec 4-5, 2006.
1. Pencil code user meeting 2006, Copenhagen, Denmark, July 13-15, 2006.

Outreach

Below I list the popular science articles and press releases that I wrote or were written about my work, plus interviews.

In particular, I am very interested in the power of education in promoting social change. Because of it, a cause I embrace is science outreach in low-income communities. I am a co-ordinator and Brazil site Director for *Ad Astra Academy*, a unique education, outreach, and development project that brings the excitement of exploration to students in some of the most underserved regions of the world. We did a pilot project in the infamous City of God favela in Rio de Janeiro, Brazil, in 2015 (with crowdfunding), an edition in Oakland in the summer of 2017, another in Bangladesh in December 2017 (with a grant from National Geographic), and we returned to Rio de Janeiro this summer (with a grant from the IAU - Office of Astronomy for Development). Link to the project: <http://www.adastra.world/>, and promotional video: <https://vimeo.com/165655662>.

- Ad Astra Academy

- Article in the Brazilian outreach journal *Planetaria* about Ad Astra (in Portuguese), Mar 2018.
- Write-ups on *Mars Academy*, our outreach program in the favelas of Rio de Janeiro. *Jornal do Brasil* (in Portuguese), Nov 2015.
- Write-up on the interview in the TV show *Science in Movement*, June 2015 (in Portuguese).
- Live interview for *Science in Movement*, Brazil, June 2015 (in Portuguese).
- Live interview for *Science and Astronomy's* hangout podcast show, May 2015, (in Portuguese).
- Write-up on the interview by *Science in Movement*, Mar 2015 (in Portuguese).
- Live interview for *Science in Movement*, Brazil, Mar 2015 (in Portuguese).
- News story in the *Wired*.
- News story in *Veja*, a leading Brazilian weekly newsletter (in Portuguese).
- News story in *Le Figaro*, leading French newspaper (in French).
- News story in *O Globo*, a leading Rio newspaper (in Portuguese).

- Panels and Outreach Talks

7. Talk at the local CSUN Planetarium about the Europa Clipper Mission, Mar 2018.
6. Talk at the local CSUN Planetarium about Exoplanets and Planet Formation, Sep 2017.
5. “The Europa Clipper mission” Invited talk at the amateur astronomer conference *AstroCon 17*, Casper WY, Aug 2017.
4. Panel about life in the Universe at the West Valley Branch of the LA public library, Aug 2017.
3. Talk at de Toledo High School in Reseda, CA, May 2017.
2. Panel about time travel at the West Valley Branch of the LA public library in celebration of the 150th anniversary of H.G. Well’s birth, Sep 2016.
1. Public talk, BIL conference, Long Beach CA, Apr 2013.

- Interviews

14. Interview for Cosmic Perspective Radio at *AstroCon17*, Aug 2017.

13. Interview for *Globo*, a major Brazilian news channel, (in Portuguese), Jan 2016.
 12. Interview and Q&A session for NICS XSEDE's podcast series. Write-up and formatting by Scott Gibson, Dec 2015.
 11. Interview for National Geographic TV show *Strange Truths*, episode on asteroid and cometary impacts, Nov 2015.
 10. Live hangout for *Science and Astronomy's* podcast show, Oct 2015, about working at NASA (in Portuguese).
 9. Interview for *Globo News*, a major Brazilian news channel, about the discovery of running liquid water on Mars (in Portuguese), Sept 2015.
 8. Live hangout for *Science and Astronomy's* podcast show, June 2015, (in Portuguese).
 7. Q&A session for *Galileu*, a major monthly popular science publication in Brazil, Mar 2015 (in Portuguese).
 6. Interview for the astronomy podcasting series at McGill university, Oct 2014.
 5. Interview for podcasting show *Stuttering is Cool*, Aug 2013.
 4. Live radio interview for the Southern California Science Radio, at invitation from the *Planetary Society*, in celebration of Carl Sagan's birthday (Nov 2012).
 3. Interview for secularist blog *Bule Voador* (Flying Teapot, in Portuguese). Interview conducted by Eli Vieira, 2010.
 2. Interview and report on *Fysikaktuellt* (in Swedish). Interview conducted by Ingela Roos, 2009.
 1. *Uppsalaforskare löser rymdmysterium* (In English and Swedish). Interview on the Swedish radio Vetenskapsradion, 2009.
- Essays and Op-ed's
 6. Op-ed *Reach for the stars: Favela children to control NASA Mars mission*, for the Toronto-based independent news website "The Mark News", Apr 2015.
 5. Op-ed *Ora, direis ouvir estrelas: Astronomia e a adesão do Brasil ao ESO* (Well, you say you listen to stars: Astronomy and Brazil joining ESO, in Portuguese), on the occasion of the Brazilian Lower House voting on the project, Mar 2015.
 4. *Como é o banheiro dos astronautas?* (How does an astronaut's bathroom work, in Portuguese), in the Brazilian publication *Science for Children*.
 3. *O céu como bandeira* (The sky for flag, in Portuguese), in the Brazilian publication *Teacher's Maganize*.
 2. *Por que não nomear os exoplanetas?* *Jornal do Brasil*, Nov 2009 (Why not naming the exoplanets?, in Portuguese).
 1. *Planeternas turbulenta födelse* (The turbulent birth of planets, in Swedish), popular write-up on Ph.D. thesis on forskning.se, 2009.
 - Commentary and Consulting
 7. Commentary on Scientific American about a recent paper on observations of planet-forming vortices, 2017.
 6. Commentary on the anniversary of Relativity (in Portuguese), Jul 2015.
 5. Post on LiHS, the Secular Humanist League of Brazil, on Brazil joining ESO, Feb 2015.

4. *Discover* magazine's story on the debate on exoplanet naming. Quotes from Alan Stern, Bill Borucki, Thierry Montmerle, Eva Plavalo, and myself. Jul 2014.
3. Commentary on HL Tauri. *Popular Astronomy*, Nov 2014 (in Swedish).
2. *Por que Marte não cresceu?* (Why didn't Mars grow bigger?, in Portuguese). Consulting in media science article, Igor Zolnerkevic. Jul 2014.
1. *Por que Urano gira de lado?* (Why does Uranus spin in its side?, in Portuguese), Igor Zolnerkevic. Consulting on media science article, 2011.

- Selected Press Coverage

22. IFLS story on our simulation of Photoelectric Instability.
21. NASA press-release on our simulation of Photoelectric Instability in disks (2.2 million visualizations, 394 thousand likes and 2700 comments in their Instagram post)
20. CSUN professors chase the Great American Eclipse.
19. Story on LA Daily News
18. *CSUN Today* (Feb 2016 and Jul 2015), CSUN's local newsletter, stories on my group and our research.
17. Proposed exoplanets may be just gas and dust *Nature press release*, Sid Perkins, Jul 2013.
16. News story on *Folha de São Paulo* about the Nature paper, Salvador Nogueira, (in Portuguese), Jul 2013.
15. Ring around the dust disk *Sky & Telescope*, Shari Balouchi, Jul 2013
14. Exoplanets in doubt after gaps found in theory ABC Science, Australia, Stuart Gary, Jul 2013
13. Evidence of alien planets? No, It's just gas. Space.com, Nola Redd, Jul 2013
12. Gas, not planets, may be source of rings around stars Science News, Jessica Shugart, Jul 2013
11. Using 18 000 processors to stir the digital pot. Exoplanet Exploration Newsletter, Jan 2013.
10. Black holes might form like planets. *Sky & Telescope*, Stephen Craft, 2012.
9. Dust rings not smoking gun for planets after all. *New Scientist*, Maggie McKee, May 2012.
8. *Na rota segura* (In Portuguese), Revista Pesquisa FAPESP, Marcos Pivetta. English translation: On a safe course, 2010.
7. *Planètes: On sait pourquoi elles survivent à leur étoiles* (In French). Science et Vie, Roman Ikonikoff, 2010.
6. Simulations justify Earth's existence. *Sky & Telescope*, Ivan Semeniuk, 2010.
5. Why the Sun Never Swallowed the Earth. *Time* magazine, Michael Lemonick, 2010.
4. How Earth survived a fiery premature death. Slashdot, 2010.
3. How Earth survived its birth. Science Daily, original press-release by Kristen Phillips, 2010.
2. Gas giants may be followed by Earth-like planets (In Danish, Swedish, and Norwegian). Illustreret Videnskab - Illustrerad Vetenskap - Illustrert Vitenskap (Science Illustrated), 2008.
1. Habitable worlds may hide in gas giants' wake. *New Scientist*, David Shiga, 2008.

References

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