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Dr. Karina Alexandra Rojas Olate

Postdoctoral Positions.

2018-2021 **Ecole Polytechnique Fédérale de Lausanne**, *Switzerland*, Advisor: Frédéric Courbin.

Education.

2014-2018 **Ph.D. in Astrophysics**, *Universidad de Valparaíso*, Valparaíso, Chile.
Thesis: "Strong Gravitational Lensing as a Probe of Structure from Small to Large Scales".
Advisor: Verónica Motta, Readers: Dante Minniti (UNAB) and Eric Jullo (LAM)

2012-2014 **Master in Astrophysics**, *Universidad de Valparaíso*, Valparaíso, Chile..
Thesis: "Gravitational lens Applications".
Advisor: Verónica Motta, Readers: Dante Minniti (UNAB) and Victor Cardenas (UV)

2007-2011 **Bachelor in Physics with specialization in Astronomy**, *Universidad de Valparaíso, Chile*.

Prizes and Grants

2020 **IAU-OAD outreach project: "Asteroids workshop: A rocky adventure"**, funding of 5875 EUR for the implementation of the workshop in 20 public Chilean schools by July 2021.

2018 **Award 100 Young Chilean Leaders**.

2017 **Grant, LSSTC Data science Fellowship Program**.

2017 **Grant, Beca CONICYT para doctorado nacional 2017**.

2014-2016 **Grant, Beca Doctoral FIB-UV**.

2015 **Graduate Student Prize Lecture**, XII SOCHIAS annual meeting.

2012 **Grant, Beca Maestría**, *GEMINI-CONICYT 32100020 y 32110004*.

Presentation in conferences.

2020 **XVI SOCHIAS Annual Meeting**, *Online*, December,9-11.
Talk: Lens finding using neural networks.

2020 **Swiss Euclid Days 2020**, *Laussane, Switzerland*, February,4-5.
Talk: Strong Lens Finding: Simulations to train Neural Networks.

2019 **Euclid Strong Lensing Working Group**, *Paris, France*, October,16-18.
Talk: Lens Finding: Simulations + CNN applied to ground base data.

2019 **Mahattan Microlens 2019**, *New York, United States*, February,14-17.
Talk: Microlensing Effect on Time Delays Measurements.

2017 **XIth Marseille Cosmology Conference: "Galaxy clusters across cosmic time"**, *Aix-En-Provence, France*, July,10-13.
Talk: New dynamical analysis for the strong lensing cluster Abell 1703.

2016 **I workshop of the southern astrophysics network**, *Santiago, Chile*, November,21-22.
Talk: Probing the stellar fraction in dark matter halos of lensing galaxies using microlensing.

2016 **XIII Annual SOCHIAS Meeting**, *Antofagasta, Chile*, March, 1-4.
Talk: Quasar accretion disks: size and temperature profile using microlensing.

2015 **Demographics and enviroment of AGN from multi-wavelength surveys**, *Chania, Grecia*, September, 21-24.
Talk: Quasar accretion disks: size and temperature profile using microlensing.

2015 **XII SOCHIAS annual meeting**, *Puerto Varas, Chile*, March, 12-15.
Plenary talk: Strong Chromatic Microlensing in HE0047-1756 and SDSS1155+6456.

Attendance to meetings, workshops, and Schools

2019 **Euclid Consortium Annual Meeting**, Helsinki, Finland, June 4-7.

2015 **School of Statistics for Astrophysics: classification and clustering**, Les Houches, France, October, 12-16.

2014 **First VLTI School in Chile**, Valparaíso, Chile, November, 3-7.

2013 **VISTA Variable in the Vía Láctea Science Meeting**, Viña del Mar, Chile, March, 21-23.

Observing Experience

SOAR Telescope, *Cerro Pachón*, Instruments: SAMI and GOODMAN.

2015B-0615 (PI Motta): November 30th to December 2nd
2016-0107 (PI Treu): June 24th to 26th
2016A-0608 (PI Motta): June 27th to 29th
2016B-0919 (PI Motta): December 3rd to 5th
2016B-0067 (PI True): December 6th to 8th

2.2m Telescope, *La Silla*, Instrument: GROND, FEROS, WFI.

QSO monitoring program observer (PI Courbin): 22 night splits between 2017 and 2018.

Data Science Experience

Euclid Lens Finding Project.

- Convolutional Neural Network (basic).
- Data catalog manipulation and analysis.
- Utilization of simple SQL queries.

LSSTC Data Science Fellowship, *Alumni of the 2nd cohort of the program that consists of six, one-week schools over a two year period in United States.*

- Session 4: Statistics, Seattle, September 17-22, 2017
- Session 5: Image processing, Baltimore, January 22-26, 2018
- Session 6: Time-domain analysis and interactive visualization, Pittsburgh, April 30 - May 4, 2018
- Session 7: Machine learning and software engineering, Chicago, November 5-12, 2018
- Session 8: Scalable software and data storage, New Jersey, March 25-29, 2019
- Session 9: Time series analysis, Pittsburgh, June 10-14, 2019

Teaching Experience

2020 **Co-Teaching class "Modeling of gravitational lens system"**, Postgrado en Astrofísica, Universidad de Valparaíso.

2020 **Supervisor of master project**, "Automatic modelling of gravitational lens system", student: Mark Maus, Ecole Polytechnique Fédérale de Lausanne.

2020 **Co-supervisor of master thesis**, "Searching for strong lenses in r-band DES images using a convolutional neural network", student: Camille Arruat, Ecole Polytechnique Fédérale de Lausanne.

2019 **Supervisor of practical work for master students**, "Redshift estimation for SL2S groups of galaxies", student: Aurelien Verdier, Ecole Polytechnique Fédérale de Lausanne.

2014 **Teaching assistant for advance astrophysics**, *Magister en Astrofísica, Universidad de Valparaíso.*

2012/2013 **Profesor de catedra for Physics**, *Pedagogía en Matemática, Universidad de Valparaíso.*

2009-2011 **Teaching assistant for Physics and Statistics**, *Universidad de Valparaíso.*

Outreach

2013-to the date **Co-founder and Science Communicator**, *Star Tres*, www.startres.net.
Science outreach initiative in Spanish that create content in social media

2017 **Scientific Assistant**.
Science collaborator in the script of the planetarium show "Bot y Lu: El Escape del Agujero Negro", planetariochile.cl.

2016 **EXPLORA annual regional congress**.
Judge for the investigations presented in the "Engineering and Technology" section, Puerto Montt, Chile

2007-2015 **Public talks**.
presentations in schools, turistic observatories and public congress related with astronomy

2009 **Science Tunnel exposition by Max Plack Institude**.
Monitor for astronomy and physics modules

Programming & Language Knowledge

Programming Languages, Python, Wolfram Mathematica, Fortran 77 and 90.

Astronomy Softwares, IRAF, DS9, Dipso, IDL, Topcat, Aladin.

Languages, Spanish (Native), English (Fluent), French (A2).

Publication Record

17 Published papers in refereed journals.

323 citations from all my publications.

h-index = 13.

	Totals	Refereed
Number of citing papers	171	161
Total citations	323	309
Number of self-citations	40	40
Average citations	10.8	18.2
Median citations	5.5	17
Normalized citations	19.4	18.3
Refereed citations	263	257
Average refereed citations	8.8	15.1
Median refereed citations	4	15
Normalized refereed citations	15.6	15.4

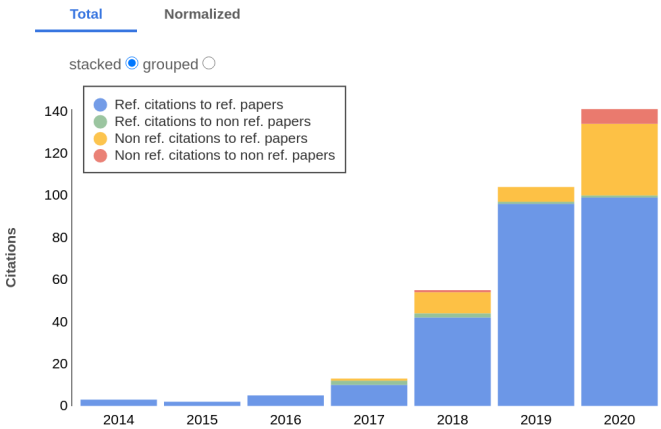

Figure obtained from NASA/ADS citation metric option.

Publications List

18.- **Measuring accretion disk sizes of lensed quasars with microlensing time delay in multi-band light curves**, 2020, A&A, Accepted..
J. H. H. Chan, **K. Rojas**, M. Millon, F. Courbin, V. Bonvin, and G. Jauffret
https://ui.adsabs.harvard.edu/abs/2020arXiv200714416C/abstract

17.- **TDCOSMO II: 6 new time delays in lensed quasars from high-cadence monitoring at the MPIA 2.2m telescope**, 2020, A&A, Volume 642, id.A193, 14 pp..
Millon, M.; Courbin, F.; Bonvin, V.; Buckley-Geer, E.; Fassnacht, C. D.; Frieman, J.; Marshall, P. J.; Suyu, S. H.; Treu, T.; Anguita, T.; Motta, V.; Agnello, A.; Chan, J. H. H.; C. -Y Chao, D.; Chijani, M.; Gilman, D.; Gilmore, K.; Lemon, C.; Lucey, J. R.; Melo, A. Paic, E.; **Rojas, K.**; Sluse, D.; Williams, P. R.; Hempel, A.; Kim, S.; Lachaume, R.; Rabus, M.
https://ui.adsabs.harvard.edu/abs/2020arXiv200610066M/abstract

16.- **HOLISMOKES – II. Identifying galaxy-scale strong gravitational lenses in Pan-STARRS using convolutional neural networks**, 2020, A&A, Accepted.
Canameras, R.; Schuldt, S.; Suyu, S. H.; Taubenberger, S.; Meinhardt, T.; Leal-Taixe, L.; Lemon, C.; **Rojas, K.**; Savary,E.
https://ui.adsabs.harvard.edu/abs/2020arXiv200413048C/abstract

15.- **Microlensing Analysis for the gravitational lens systems SDSS0924+0219, Q1355-2257, and SDSS1029+2623**, 2020, The Astrophysical Journal, 890:3 (9pp).
Rojas, K.; Motta, V.; Mediavilla, E.; Jiménez-Vicente, J.; Falco, E.; Fian,C.
https://ui.adsabs.harvard.edu/abs/2020ApJ...890....3R/abstract

14.- **COSMOGRAIL. XVIII. time delays of the quadruply lensed quasar WFI2033-4723**, 2019, A&A, Volume 629, id.A97, 13 pp.
Bonvin, V.; Millon, M.; Chan, J. H.-H.; Courbin, F.; Rusu, C. E.; Sluse, D.; Suyu, S. H.; Wong, K. C.; Fassnacht, C. D.; Marshall, P. J.; Treu, T.; Buckley-Geer, E.; Frieman, J.; Hempel, A.; Kim, S.; Lachaume, R.; Rabus, M.; Chao, D. C. -Y.; Chijani, M.; Gilman, D.; Gilmore, **K.; Rojas**, K.; Williams, P.; Anguita, T.; Kochanek, C. S.; Morgan, C.; Motta, V.; Tewes, M.; Meylan, G.,
https://ui.adsabs.harvard.edu/abs/2019A%26A...629A..97B/abstract

13.- **Quasar microlensing: Revolutionizing our understanding of quasar structure and dynamics**, 2019, Astro2020: Decadal Survey on Astronomy and Astrophysics, science white papers, no. 487; Bulletin of the American Astronomical Society, Vol. 51, Issue 3, id. 487.
Moustakas, Leonidas; Anguita, Timo; Chartas, George; Cornachione, Matthew; Dai, Xinyu; Fian, Carina; Jimenez-Vicente, Jorge; Labrie, Kathleen; Macleod, Chelsea; Mediavilla, Evencio; Morgan, Christopher W.; O'Dowd, Matthew; Lewis, Geraint; Motta, Veronica; Nierenberg, Anna; Pooley, David; **Rojas, Karina**; Sluse, Dominique; Vernardos, Georgios; Webster, Rachel; Yong, Suk Yee,
https://ui.adsabs.harvard.edu/abs/2019BAAS...51c.487M/abstract

12.- **Constraining the microlensing effect on time delays with a new time-delay prediction model in H_0 measurements**, 2018, Monthly Notices of the Royal Astronomical Society, Volume 481, Issue 1, p.1115-1125.
Chen, Geoff C. -F.; Chan, James H. H.; Bonvin, Vivien; Fassnacht, Christopher D.; **Rojas, Karina**; Millon, Martin; Courbin, Fred; Suyu, Sherry H.; Wong, Kenneth C.; Sluse, Dominique; Treu, Tommaso; Shajib, Anowar J.; Hsueh, Jen-Wei; Lagattuta, David J.; Koopmans, Leon V. E.; Vegetti, Simona; McKean, John P.
https://ui.adsabs.harvard.edu/abs/2018MNRAS.481.1115C/abstract

11.- **The STRong lensing Insights into the Dark Energy Survey (STRIDES) 2016 follow-up campaign - II. New quasar lenses from double component fitting**, 2018, Monthly Notices of the Royal Astronomical Society, Volume 480, Issue 4, p.5017-5028.
Anguita, T.; Schechter, P. L.; Kuropatkin, N.; Morgan, N. D.; Ostrovski, F.; Abramson, L. E.; Agnello, A.; Apostolovski, Y.; Fassnacht, C. D.; Hsueh, J. W.; Motta, V.; **Rojas, K.**; Rusu, C. E.; Treu, T.; Williams, P.; Auger, M.; Buckley-Geer, E.; Lin, H.; McMahon, R.; Abbott, T. M. C.; Allam, S.; Annis, J.; Bernstein, R. A.; Bertin, E.; Brooks, D.; Burke, D. L.; Carnero Rosell, A.; Carrasco-Kind, M.; Carretero, J.; Cunha, C. E.; D'Andrea, C. B.; De Vicente, J.; DePoy, D. L.; Desai, S.; Diehl, H. T.; Doel, P.; Flaugher, B.; GarcÃa-Bellido, J.; Gerdes, D. W.; Gruen, D.; Gruendl, R. A.; Gschwend, J.; Hartley, W. G.; Hollowood, D. L.; Honscheid, K.; James, D. J.; Kuehn, K.; Lima, M.; Maia, M. A. G.; Miquel, R.; Plazas, A. A.; Sanchez, E.; Scarpine, V.; Smith, M.; Soares-Santos, M.; Sobreira, F.; Suchyta, E.; Tarle, G.; Walker, A. R.
https://ui.adsabs.harvard.edu/abs/2018MNRAS.480.5017A/abstract

10.- **The STRong lensing Insights into the Dark Energy Survey (STRIDES) 2016 follow-up campaign - I. Overview and classification of candidates selected by two techniques**, 2018, Monthly Notices of the Royal Astronomical Society, Volume 481, Issue 1, p.1041-1054.
Treu, T.; Agnello, A.; Baumer, M. A.; Birrer, S.; Buckley-Geer, E. J.; Courbin, F.; Kim, Y. J.; Lin, H.; Marshall, P. J.; Nord, B.; Schechter, P. L.; Sivakumar, P. R.; Abramson, L. E.; Anguita, T.; Apostolovski, Y.; Auger, M. W.; Chan, J. H. H.; Chen, G. C. F.; Collett, T. E.; Fassnacht, C. D.; Hsueh, J. -W.; Lemon, C.; McMahon, R. G.; Motta, V.; Ostrovski, F.; **Rojas, K.**; Rusu, C. E.; Williams, P.; Frieman, J.; Meylan, G.; Suyu, S. H.; Abbott, T. M. C.; Abdalla, F. B.; Allam, S.; Annis, J.; Avila, S.; Banerji, M.; Brooks, D.; Carnero Rosell, A.; Carrasco Kind, M.; Carretero, J.; Castander, F. J.; D'Andrea, C. B.; da Costa, L. N.; De Vicente, J.; Doel, P.; Eifler, T. F.; Flaugher, B.; Fosalba, P.; GarcÃa-Bellido, J.; Goldstein, D. A.; Gruen, D.; Gruendl, R. A.; Gutierrez, G.; Hartley, W. G.; Hollowood, D.; Honscheid, K.; James, D. J.; Kuehn, K.; Kuropatkin, N.; Lima, M.; Maia, M. A. G.; Martini, P.; Menanteau, F.; Miquel, R.; Plazas, A. A.; Romer, A. K.; Sanchez, E.; Scarpine, V.; Schindler, R.; Schubnell, M.; Sevilla-Noarbe, I.; Smith, M.; Smith, R. C.; Soares-Santos, M.; Sobreira, F.; Suchyta, E.; Swanson, M. E. C.; Tarle, G.; Thomas, D.; Tucker, D. L.; Walker, A. R.
https://ui.adsabs.harvard.edu/abs/2018MNRAS.481.1041T/abstract

9.- **COSMOGRAIL. XVII. Time delays for the quadruply imaged quasar PG 1115+080**, 2018, Astronomy & Astrophysics, Volume 616, id.A183, 15 pp.
Bonvin, V.; Chan, J. H. H.; Millon, M.; **Rojas, K.**; Courbin, F.; Chen, G. C. -F.; Fassnacht, C. D.; Paic, E.; Tewes, M.; Chao, D. C. -Y.; Chijani, M.; Gilman, D.; Gilmore, K.; Williams, P.; Buckley-Geer, E.; Frieman, J.; Marshall, P. J.; Suyu, S. H.; Treu, T.; Hempel, A.; Kim, S.; Lachaume, R.; Rabus, M.; Anguita, T.; Meylan, G.; Motta, V.; Magain, P.
https://ui.adsabs.harvard.edu/abs/2018A&A...616A.183B/abstract

8.- **Discovery of three strongly lensed quasars in the Sloan Digital Sky Survey**, 2018, Monthly Notices of the Royal Astronomical Society: Letters, Volume 477, Issue 1, p.L70-L74.
Williams, P. R.; Agnello, A.; Treu, T.; Abramson, L. E.; Anguita, T.; Apostolovski, Y.; Chen, G. C. -F.; Fassnacht, C. D.; Hsueh, J. W.; Lemaux, B. C.; Motta, V.; Oldham, L.; **Rojas, K.**; Rusu, C. E.; Shajib, A. J.; Wang, X.
https://ui.adsabs.harvard.edu/abs/2018MNRAS.477L..70W/abstract

7.- **COSMOGRAIL: the COSmological MOnitoring of GRAvItational Lenses. XVI. Time delays for the quadruply imaged quasar DES J0408-5354 with high-cadence photometric monitoring**, 2018, Astronomy & Astrophysics, Volume 609, id.A71, 9 pp.
Courbin, F.; Bonvin, V.; Buckley-Geer, E.; Fassnacht, C. D.; Frieman, J.; Lin, H.; Marshall, P. J.; Suyu, S. H.; Treu, T.; Anguita, T.; Motta, V.; Meylan, G.; Paic, E.; Tewes, M.; Agnello, A.; Chao, D. C. -Y.; Chijani, M.; Gilman, D.; **Rojas, K.**; Williams, P.; Hempel, A.; Kim, S.; Lachaume, R.; Rabus, M.; Abbott, T. M. C.; Allam, S.; Annis, J.; Banerji, M.; Bechtol, K.; Benoit-Lévy, A.; Brooks, D.; Burke, D. L.; Carnero Rosell, A.; Carrasco Kind, M.; Carretero, J.; D'Andrea, C. B.; da Costa, L. N.; Davis, C.; DePoy, D. L.; Desai, S.; Flaugher, B.; Fosalba, P.; GarcÃa-Bellido, J.; Gaztanaga, E.; Goldstein, D. A.; Gruen, D.; Gruendl, R. A.; Gschwend, J.; et al.
https://ui.adsabs.harvard.edu/abs/2018A&A...609A..71C/abstract

6.- **Probing the Broad-Line Region and the Accretion Disk in the Lensed Quasars HE 0435-1223, WFI 2033-4723, and HE 2149-2745 Using Gravitational Microlensing**, 2017, The Astrophysical Journal, Volume 835, Issue 2, article id. 132, 13 pp.
Motta, V.; Mediavilla, E.; **Rojas, K.**; Falco, E. E.; Jiménez-Vicente, J.; Muñoz, J. A.
https://ui.adsabs.harvard.edu/abs/2017ApJ...835..132M/abstract

5.- **Determination of Pulsation Periods and Other Parameters of 2875 Stars Classified as MIRA in the All Sky Automated Survey (ASAS)**, 2016, The Astrophysical Journal Supplement Series, Volume 227, Issue 1, article id. 6, 13 pp.
Vogt, N.; Contreras-Quijada, A.; Fuentes-Morales, I.; Vogt-Geisse, S.; Arcos, C.; Abarca, C.; Agurto-Gangas, C.; Caviedes, M.; DaSilva, H.; Flores, J.; Gotta, V.; Peñaloza, F.; **Rojas, K.**; Villaseñor, J. I.
https://ui.adsabs.harvard.edu/abs/2016ApJS..227....6V/abstract

4.- **Combining strong lensing and dynamics in galaxy clusters: integrating MAMPOSSt within LENSTOOL. I. Application on SL2S J02140-0535**, 2016, Astronomy & Astrophysics, Volume 595, id.A30, 17 pp.
Verdugo, T.; Limousin, M.; Motta, V.; Mamon, G. A.; Foex, G.; Gastaldello, F.; Jullo, E.; Biviano, A.; **Rojas, K.**; Muñoz, R. P.; Cabanac, R.; Magaña, J.; Fernández-Trincado, J. G.; Adame, L.; De Leo, M. A.
https://ui.adsabs.harvard.edu/abs/2016A&A...595A..30V/abstract

3.- **VVV Survey Observations of a Microlensing Stellar Mass Black Hole Candidate in the Field of the Globular Cluster NGC 6553**, 2015, The Astrophysical Journal Letters, Volume 810, Issue 2, article id. L20, 5 pp.
Minniti, D.; Contreras Ramos, R.; Alonso-GarcÃa, J.; Anguita, T.; Catelan, M.; Gran, F.; Motta, V.; Muro, G.; **Rojas, K.**; Saito, R. K.
https://ui.adsabs.harvard.edu/abs/2015ApJ...810L..20M/abstract

2.- **Strong Chromatic Microlensing in HE0047-1756 and SDSS1155+6346**, 2015, The Astrophysical Journal, Volume 797, Issue 1, article id. 61, 7 pp.
Rojas, K.; Motta, V.; Mediavilla, E.; Falco, E.; Jiménez-Vicente, J.; Muñoz, J. A, 2014
https://ui.adsabs.harvard.edu/abs/2014ApJ...797...61R/abstract

1.- **Microlensing of Quasar Ultraviolet Iron Emission**, 2013, The Astrophysical Journal, Volume 778, Issue 2, article id. 123, 6 pp.
Guerras, E.; Mediavilla, E.; Jimenez-Vicente, J.; Kochanek, C. S.; Muñoz, J. A.; Falco, E.; Motta, V.; **Rojas, K.**
https://ui.adsabs.harvard.edu/abs/2013ApJ...778..123G/abstract