Chemin des Maillettes
1290 Versoix, Switzerland
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Webpage: krojas.github.io

Dr. Karina Alexandra Rojas Olate

Postdoctoral Positions.

FNS project: High precision cosmology in the dark sector, *Ecole Polytechnique Fédérale de Lausanne*, Switzerland., 2018-2021.

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".

2012-2014 **Master in Astrophysics**, *Universidad de Valparaíso*, Valparaíso, Chile..
Thesis: "Strong Gravitational Lensing as a Probe of Structure from Small to Large Scales".

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

Publications

18.- **Measuring accretion disk sizes of lensed quasars with microlensing time delay in multi-band light curves**, 2020, A&A, Submitted.
J. H. H. Chan, **K. Rojas**, M. Millon, F. Courbin, V. Bonvin, and G. Jauffret
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17.- **TDCOSMO II: 6 new time delays in lensed quasars from high-cadence monitoring at the MPIA 2.2m telescope**, 2020, A&A, Submitted.
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.; Gutierrez, G.; Honscheid, K.; James, D. J.; Kuehn, K.; Kuhlmann, S.; Kuropatkin, N.; Lahav, O.; Lima, M.; Maia, M. A. G.; March, M.; Marshall, J. L.; McMahon, R. G.; Menanteau, F.; Miquel, R.; Nord, B.; Plazas, A. A.; Sanchez, E.; Scarpine, V.; Schindler, R.; Schubnell, M.; Sevilla-Noarbe, I.; Smith, M.; Soares-Santos, M.; Sobreira, F.; Suchyta, E.; Tarle, G.; Tucker, D. L.; Walker, A. R.; Wester, W.
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

Presentation in conferences.

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 **From theory to applications: celebrating a century of gravitational lensing**, *Leiden, Holanda*, July, 11-15.
Poster: Preliminary analysis for SDSS0924+0219 and Q1355-2257.

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.
Talk: Strong Chromatic Microlensing in HE0047-1756 and SDSS1155+6456.

2014 **Galaxy Groups: Laboratories to study galaxy evolution.**, *La Serena, Chile*, November, 10-11.
Poster: Dynamical analysis of lens group SL2S J02140-0535: Preliminary results

2014 **XI reunón anual SOCHIAS**, *Los Andes, Chile*, January, 12-14.
Poster: Estimating the size of the emitting region in lens quasars using chromatic microlensing

2013 **LARIM**, *Florianípolis, Brasil*, November, 25-30.
Poster: Chromatic microlensing in HE0047-1756 and SDSS1155+6346

2013 **INCAI**, *Santiago, Chile*, August, 15-19.
Talk: Estimating the size of the emitting region in lens quasars HE0047-1756 and SDSS1155+6346 using chromatic microlensing.
Póster: VVV Galactic Star Clusters: VVV CL014, K. Rojas, J. Borissova, R. Kurtev and VVV star cluster team.

2012 **XXIV Canary Islands Winter School of Astrophysics, Astrophysical Applications of Gravitational Lensing**, *Puerto de la Cruz, España*, November, 4-16.
Poster: Evidence of microlensing in the gravitational lens systems HE0047-1756 and SDSS1155+6346.

2012 **X SOCHIAS annual meeting**, *Valparaíso, Chile*, October, 10-12.
Poster: Evidence of microlensing in the gravitational lens systems HE0047-1756 and SDSS1155+6346

Attendance to meetings, workshops, and Schools

2019 **LSSTC Data science fellowship program**, Session 9: Time series analysis.
Pittsburgh, United States, June 10-14

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

2019 **LSSTC Data science fellowship program**, Session 8: Scalable software and data storage.
New Jersey, United States, March 25-29

2018 **LSSTC Data science fellowship program**, Session 7: Machine learning and software engineering.
Chicago, United States, November 5-12

2018 **LSSTC Data science fellowship program**, Session 6: Time-domain analysis and interactive visualization.
Pittsburgh, United States, April 30 - May 4

2018 **LSSTC Data science fellowship program**, Session 5: Image processing.
Baltimore, United States, January, 22-26

2017 **LSSTC Data science fellowship program**, Session 4: Statistics.
Seattle, United States,September, 17-22

2016 **Towards Science in Chile with LSST**.
Viña del Mar, Chile, December, 12-13

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 **Cosmosur II**.
Valparaíso, Chile, May, 27-31

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

Teaching Experience

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

2019 **Supervisor of practical work for master students**, "Redshift estimation for SL2S groups of galaxies", 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.*

Prizes and Grants

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

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

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

2015 **Grant: Beca SOCHIAS congresos en el extranjero**.

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

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

Observing Experince

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.

Training run (PI Courbin): January 20th to 26th, 2017
QSO monitoring program observer (PI Courbin): April 10th to 12th, 2017
QSO monitoring program observer (PI Courbin): April 2nd to 9th, 2018
QSO monitoring program observer (PI Courbin): May 28th to 2nd June, 2018

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 like youtube videos, infographic material, articles in the blog, etc

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 Knowledge

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

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

Languages

Spanish, Native.

English, Full professional proficiency.

French, A2.