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| CONTACT INFORMATION | Stanford University KIPAC 452 Lomita Mall, Room 244 Stanford, CA 94305-4085, USA | <i>E-mail:</i> sibirrer@stanford.edu <i>Web:</i> https://sibirrer.github.io <i>ORCID:</i> 0000-0003-3195-5507 |
| RESEARCH INTERESTS | Cosmology - gravitational lensing - probing fundamental physics with astrophysical observables - dark matter - dark energy | |
| RESEARCH POSITIONS | Assistant Professor Stony Brook University | 01/2023 - |
| | Kavli Postdoctoral Fellow Stanford University Advisor: Risa Wechsler | 09/2019 - present |
| | Postdoctoral Researcher University of California, Los Angeles (UCLA) Advisor: Tommaso Treu | 01/2017 - 08/2019 |
| EDUCATION | PhD in Physics (Dr. Sc. ETH in Physik) Swiss Federal Institute of Technology (ETH Zürich) Advisors: Alexandre Réfrégier, Adam Amara | 05/2013 - 12/2016 |
| | M. Sc. in Physics (MSc ETH in Physik) Swiss Federal Institute of Technology (ETH Zürich) Advisors: Alexandre Réfrégier, Simon Lilly | 09/2011 - 03/2013 |
| | Student exchange program Hong Kong University of Science and Technology (HKUST) | 08/2010 - 12/2010 |
| | B. Sc. in Physics (BSc ETH in Physik) Swiss Federal Institute of Technology (ETH Zürich) | 09/2008 - 08/2011 |
| TEACHING | Strong lensing: Mexican AstroCosmo Statistics School 2021 <i>Lecturing an interactive course on strong gravitational lensing, lecture notebooks, Mexico (virtual)</i> | Summer 2021 |
| | Advanced Physics Lab: Advanced bachelor level lab course <i>Responsible for the telescope and operation, mentoring student projects, ETH Zürich</i> | Fall 2014 - Fall 2016 |
| | Astrophysics I: 3 rd yr undergraduate course <i>Teaching assistant, taught weekly practice class, ETH Zürich</i> | Fall 2013 |
| | Physics I: 1 st yr undergraduate course (Physics & Maths students) <i>Teaching assistant, taught weekly practice class, ETH Zürich</i> | Fall 2012 |

Analysis II: 1st yr undergraduate course (Physics & Maths students) Spring 2010, Spring 2011
Teaching assistant, taught weekly practice class, ETH Zürich

Swiss Physics Olympiads: High school physics competition 2008 - 2016
Taught lectures and exercises to prepare students for the International Physics Olympiad

MENTORING

Siyi Song, undergrad summer student, Stanford 2022
Vikram Bhamre, high school student 2022
Sydney Erickson, PhD rotation and thesis, Stanford 2021, 2022 - present
Elise Darragh-Ford, PhD thesis, Stanford ([pubs](#)) 2020 - present
Ethan Nadler, PhD thesis, Stanford ([pubs](#)) 2020 - 2021
Madison Ueland, undergrad summer student, Stanford ([pubs](#)) 2020, 2021
Ji Won Park, PhD thesis, Stanford ([pubs](#)) 2019 - present
Sebastian Wagner-Carena, PhD thesis, Stanford ([pubs](#)) 2019 - present
Thomas Schmidt, PhD thesis, UCLA ([pubs](#)) 2019 - present
Lilan Yang, PhD thesis, UCLA ([pubs](#)) 2018 - 2020
Anowar Shajib, PhD thesis, UCLA ([pubs](#)) 2017 - 2020
Daniel Gilman, PhD thesis, UCLA ([pubs](#)) 2017 - 2020
Eden Molina, Undergrad project, UCLA ([pubs](#)) 2018 - 2019
Felix A. Kuhn, Semester & Master thesis, ETH Zurich ([pubs](#)) Fall 2016
Florian Lienhard, Semester thesis, ETH Zurich Spring 2016
Felix Mayor, Semester thesis, ETH Zurich Spring 2016
Cyril Welschen, Master thesis, ETH Zurich Fall 2015 - Spring 2016
Kevin Fusshoeller, Semester thesis, ETH Zurich Spring 2015
Janik Andrejkovic, Semester thesis, ETH Zurich Spring 2015

AWARDS AND SUPPORT

Nomination for George E. Valley Jr. Prize (APS Award) 2020
Kavli Fellowship (Postdoctoral Fellowship) at Stanford University 2019
3 years independent postdoctoral fellowship to conduct research in cosmology at Stanford, USD 210'000
Kugelpyramide (lifetime award) of the Swiss Scientific Olympiads 2016
Awarded annually to a personality who made significant contributions to Youth and Science.
Experimental Innovation Award (teaching award) of the Department of Physics, ETH Zürich 2016
for the best innovation in the Advanced Student Lab of the year
Swiss Study Foundation, PhD program 2013 - 2016
promotions for prosperous PhD students in acquiring interdisciplinary and non-academic skills
Swiss Study Foundation, student program 2009 - 2013
promotions for prosperous students in acquiring interdisciplinary and non-academic skills

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| | Swiss Physics Olympiad | 2007 |
| | <i>High school level individual physics competition.</i> | |
| | <i>1. place (winner) preliminary round</i> | |
| | <i>1. place (winner) national round</i> | |
| | <i>Honorable mention, International Physics Olympiad, Isfahan, Iran</i> | |
| OBSERVER | Keck1 with OSIRIS , 3 half nights | 06/2017 |
| EXPERIENCE | <i>IFU observations of absorption line spectroscopy for resolved stellar kinematics, remote observing</i> | |
| | Blanco telescope (CTIO) with DECam , 8 nights | 11/2014 |
| | <i>Observer for the Dark Energy Survey</i> | |
| | 50 cm corrected Dall-Kirkham design , ~ 30 nights | 2013 - 2016 |
| | <i>Instructor of the advanced lab course at ETH Zürich</i> | |
| GRANTED PROPOSALS | <i>Allocated observations</i> | |
| | US-PI , <i>Strong lensing commissioning</i> , Vera Rubin Observatory | 01/2022 |
| | Co-I , <i>Exploring optical quasar variability from intraday to monthly rest-frame timescales</i> , GNTT spectroscopy 27.6h, PI: C. Lemon | 12/2021 |
| | Co-I , <i>A Galaxy Redshift Survey of the Line-of-Sight Environment of Three Lensed Quasar Quads</i> , GEMINI South spectroscopy 13.3h, PI: E. Buckley-Geer | 12/2021 |
| | Co-I , <i>Probing Dark Matter Self Interaction with Strong Lensing Clusters</i> , GEMINI North spectroscopy 6.4h, PI: T. Jeltema | 12/2021 |
| | Co-I , <i>A Galaxy Redshift Survey of the Line-of-Sight Environments of Four Lensed Quasar Quads</i> , GEMINI South spectroscopy 26h, PI: E. Buckley-Geer | 06/2021 |
| | Co-I , <i>High-cadence Lens Monitoring for Time Delay Cosmography</i> , NOAO LCO-2m, PI: C. Chen | 06/2021 |
| | Co-I , <i>100% gain in precision and accuracy of H_0 measurement from JWST stellar kinematics of a lens galaxy</i> , JWST Cycle 1, PI: A. Yildirim | 03/2021 |
| | Co-I , <i>A definitive test of the dark matter paradigm on small scales</i> , JWST Cycle 1, PI: A. Nierenberg | 03/2021 |
| | Co-I , <i>H_0, the stellar initial mass function, and other dark matters from a large sample of quadruply imaged quasars</i> , HST, PI: T. Treu | 08/2018 |
| | Co-I , <i>Testing CDM with the WFC3 Grism</i> , HST, PI: A. Nierenberg | 04/2017 |
| | Co-I , <i>Probing the dark universe with quadruply imaged quasars</i> , HST, PI: T. Treu | 04/2017 |
| | Co-I , <i>The first quadruply lensed quasars from the DES and VST ATLAS surveys</i> , HST, PI: P. Schechter | 04/2016 |

Co-I, *A unique probe of the dark matter distribution in a halo at $z=1$: A strong lens with a bright central image*, HST, PI: T. Collett 04/2016

Allocated computational resources

Co-PI, *Highly-detailed strong-gravitational lens modeling to measure the Hubble constant*, XSEDE startup allocation, 100'000 CPU hours, PI: T. Treu, A. Shajib (lead) 08/2019

Analysis proposals

Co-I, *Systematics in H_0 from lensing: a comprehensive study of internal structure in elliptical galaxies*, HST archival, PI: A. Shajib 05/2020

COMMUNITY
CONTRIBUTIONS

Collaboration contributions and memberships

LSST-DESC, *Strong lensing topical team co-convenor* 2022 -

LensWatch, *member* 2021 - present

LSST Strong Lensing Science Collaboration, *member* 2020 - present

SkyPy project, *member* 2020 - present

Hyper Suprime-Cam Survey, *external collaborator* 2019 - present

LSST-DESC, *active in time domain and dark matter working group, full member* 2019 - present

TDCOSMO collaboration, *founding member, lead author of a key publication* 2019 - present

The Dark Energy Survey (DES), *Strong Lensing Working Group coordinator* 2017 - present

Deep Skies Lab, *member* 2018 - present

KAPA collaboration, *science team member* 2018 - present

H0LiCOW collaboration, *Member, lead author of a key publication* 2017 - 2020

STRIDES collaboration, *Co-PI* 2017 - present

The Dark Energy Survey (DES), *Member, data access rights* 2013 - present

Community services

BOOM! A workshop on explosive transients with LSST, conference, Urbana-Champaign, *SOC member* 07/2022

KIPAC-SITP joint theory-observation journal club, *co-initiator* 2021 - present

Snowmass 2021, *Community white paper co-facilitator* 2021 - present

KIPAC LSST early release science group, Stanford University, *co-organizer* 2020 - present

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| Astrophysics graduate admission committee, Stanford University, <i>member</i> | 2020/2021 |
| Colloquium committee, Stanford University, <i>member</i> | 2020 - present |
| Shedding Light on the Dark Universe with Extremely Large Telescopes, conference, UCLA, <i>LOC member</i> | 04/2018 |
| Tuesday Lunch Talk, seminar series, UCLA, <i>coordinator</i> | 2018 - 2019 |
| Astronomy diversity committee, UCLA, <i>member</i> | 2018 - 2019 |
| NASA time allocation committee, <i>referee for HST mid-cycle</i> | 2019, 2020, 2021 |
| Referee for <i>Nature Astronomy, PRD, PRL, Monthly Notices of the Royal Astronomical Society, The Astrophysical Journal, Astronomy&Astrophysics, Astronomy&Computing, JOSS</i> | 2017 - present |
| <i>Broader impact services</i> | |
| International Physics Olympiad 2016, Zurich <i>Executive chairman, Budget of CHF 3 Mio.</i> | 2014 - 2016 |
| Municipality planing panel, Buchrain, Switzerland <i>Member, Strategic planing and advisory board of the municipality</i> | 2012 - 2016 |
| Swiss Physics Olympiad, <i>national coordinator</i> <i>Responsible for the national selection process and training</i> | 2010 - 2015 |

CONFERENCES & [*invited, †virtual]
WORKSHOPS

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| TDCOSMO collaboration meeting, EPFL, SUI | 06/2022 |
| * Line of sight workshop , Montpellier, FRA | 06/2022 |
| †DESC collaboration meeting (Meeting Contact Person) | 02/2022 |
| *† Cosmology with the Roman Space Telescope (panelist) | 01/2022 |
| †DESC collaboration meeting, (session facilitator) | 07/2021 |
| *† 16th Marcel Grossmann meeting | 07/2021 |
| †Cosmology from home 2021 (talk and session co-host) | 07/2021 |
| †PPC 2021, Oklahoma, USA | 5/2021 |
| †Streams 2021, Flatiron Institute, USA | 2/2021 |
| †Time-domain cosmology with strong lenses, IPMU (panelist) | 1/2021 |
| C†Cosmology from home 2020 (talk and session host) | 08/2020 |
| †Galaxy-halo connection 2020, UCSC | 08/2020 |
| †H ₀ 2020, ESO conference | 06/2020 |
| * Near-Far workshop , Nappa, USA | 12/2019 |
| Bay Area local group meeting, Stanford, USA | 11/2019 |
| * LSST Dark Matter workshop , University of Chicago, USA | 06/2019 |
| STRIDES/H0LiCOW workshop, DARK Copenhagen, Denmark | 06/2019 |
| Key Science Projects with US-extremely large telescopes, Tucson, USA | 11/2018 |
| * The future of H₀: Crisis or Concordance? , Chicago, USA | 10/2018 |
| * Shedding Light on the Dark Universe with ELT's , Trieste, IT | 07/2018 |

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| * Dark Matter workshop , Madrid, ESP | 06/2018 |
| * MIAPP distance ladder workshop , Garching, GER | 06/2018 |
| * Lensing substructure modelling challenge , Reykjavik, ISL | 06/2018 |
| STRIDES/H0LICOW workshop, UCLA, USA | 05/2018 |
| Shedding Light on the Dark Universe with ELT's, UCLA, USA | 04/2018 |
| Pacific coast gravity meeting, Caltech, USA | 03/2018 |
| * Dark Matter@SoCal , Caltech, USA | 08/2017 |
| STRIDES/H0LiCOW workshop, MPA Garching, GER | 06/2017 |
| Aosta strong lensing meeting, Cogne, IT | 06/2017 |
| Dark Energy Survey Collaboration meeting, SLAC, USA | 05/2016 |
| STRIDES/H0LiCOW workshop, UCLA, USA | 05/2016 |
| * Dark Matter@ETH workshop , ETH Zurich, SUI | 02/2016 |
| Dark Energy Survey Collaboration meeting, Madrid, SPN | 10/2015 |
| Dark Energy Survey Collaboration meeting, Ann Arbor, USA | 05/2015 |
| STRIDES/H0LiCOW workshop, EPFL, SUI | 04/2015 |
| Swiss Cosmology Days, Geneva, SUI | 02/2015 |
| STRIDES workshop, Cambridge, UK | 10/2014 |
| Santa Cruz Galaxy Evolution workshop, USA | 08/2014 |
| EWASS, Geneva, SUI | 06/2014 |
| Swiss Cosmology Day, Bern, SUI | 02/2013 |

SEMINARS & DEPARTEMENTAL TALKS [*invited, †virtual]

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| *† Physics Colloquium , Birmingham University, UK | 3/2022 |
| *† Astrophysics Colloquium , CUNY Stony Brook, USA | 2/2022 |
| †Cosmology Journal Club, University of Cambridge, UK | 12/2021 |
| *† OKC colloquia , Oskar Klein Center, Stockholm, SWE | 1/2022 |
| †Galactic dynamics group meeting, U Toronto, CAN | 12/2021 |
| *† AEC seminar , University of Bern, SUI | 9/2021 |
| *† ARC seminar , University of KwaZulu-Natal, SA | 9/2021 |
| *† Astrophysics seminar , JPL, USA | 9/2021 |
| *† Cosmology/HEP seminar , Imperial College London, UK | 3/2021 |
| *† Colloquium , University of Utah, USA | 2/2021 |
| *† Newton 1665 seminar , Pisa, IT | 11/2020 |
| †CosmoClub, ETH Zurich, SUI | 10/2020 |
| *† Journal club , IAP Sorbonne University, Paris, FRA | 10/2020 |
| *† Cosmology Group meeting , Princeton University, Princeton, USA | 08/2020 |
| *† Survey Group meeting , University of Chicago, Chicago, USA | 07/2020 |
| *† Cosmology Seminar , CERN, SUI, | 07/2020 |
| *† Cosmology Talks , youtube, | 07/2020 |
| *† Astrophysics Colloquium , Stanford, USA | 07/2020 |
| †Seminar, IPMU, Tokyo, JPN | 04/2020 |
| Seminar, Stanford University, Stanford, USA | 02/2020 |
| Seminar, UC Santa Cruz, Santa Cruz, USA | 02/2020 |
| Seminar, University of Sussex, Brighton, UK | 01/2020 |
| Seminar, University College London, London, UK | 01/2020 |
| Seminar, Portsmouth University, Portsmouth, UK | 01/2020 |

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| * ML and Stats Forum , Berkeley, USA | 12/2019 |
| Strong Lensing Jamboree, Stanford, USA | 08/2019 |
| * Cosmology Seminar , FermiLab, USA | 07/2019 |
| Seminar, University of Heidelberg, GER | 06/2019 |
| Seminar, INAF, Rome, IT | 06/2019 |
| * Astronomy Colloquium , UCLA, Los Angeles, USA | 03/2019 |
| * Seminar , JPL, Pasadena, USA | 03/2019 |
| Lunch talk, Carnegie Observatories, Pasadena, USA | 03/2019 |
| * ITC Colloquium , CfA, Harvard, USA | 03/2019 |
| Survey Group meeting, University of Chicago, Chicago, USA | 02/2019 |
| * Physics Colloquium , California State University, Los Angeles, USA | 02/2019 |
| * Statistics Colloquium , University of Notre Dame, USA | 09/2018 |
| Cosmology Seminar, MPA, Garching, GER | 06/2018 |
| Lunch seminar, UC Santa Barbara, USA | 06/2018 |
| * Colloquium , UC Davis, USA | 04/2018 |
| Galaxy lunch seminar, Yale, New Heaven, USA | 01/2018 |
| IPAC lunch seminar, Caltech, USA | 10/2017 |
| * Colloquium , UC Irvine, USA | 10/2017 |
| Research seminar, UCLA, USA | 02/2017 |
| * AMP colloquium , ETH Zurich, SUI | 11/2016 |
| Research seminar, IfA ETH Zurich, SUI | 10/2016 |
| Seminar, Tata Institute for Fundamental Research, Mumbai, IND | 07/2015 |
| Research seminar, IfA ETH Zurich, SUI | 03/2015 |
| Research seminar, IfA ETH Zurich, SUI | 09/2013 |

PUBLIC
OUTREACH

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| Invited talk, San Francisco Amateur Astronomers, San Francisco (virtual) | 08/2020 |
| Public lecture, KIPAC public lecture, (virtual) | 07/2020 |
| Invited talk, San Mateo Astronomical Society, San Mateo | 11/2019 |
| Demonstrator, SLAC Community Day, SLAC/Stanford | 10/2019 |
| Invited talk, Astronomy on Tap, San Francisco | 09/2019 |
| Invited talk, Orange County Astronomers, Orange | 07/2019 |
| Invited talk, Kern Astronomical Society, Backersfield | 04/2019 |
| Planetarium show, Astronomy live! program, UCLA | 2018 |
| Invited talk, Ventura Astronomical society | 01/2018 |
| Invited talk, Astronomyical Society Aarau | 04/2016 |
| Invited talk, Urania Sternwarte Zürich | 03/2016 |
| Invited talk, Treffpunkt Science City, ETH Zürich | 03/2015 |
| Public tours/telescope visits, ETH Zürich | 2014 - 2016 |

TECHNICAL
SKILLS

software development, High Performance Computing, Python (professional), C++ (basic), L^AT_EX

OVERVIEW

Publications: 65 (14 first-author) published, 10 submitted
 Bibliometrics: 3200+ total citations, h -index of 29 (according to NASA ADS)
 Five most important publications highlighted by ***

SUBMITTED
JOURNAL
PUBLICATIONS

10. S. Wagner-Carena, J. Aalbers, **S. Birrer**, E. Nadler, E. Darragh-Ford, P. J. Marshall, R. Wechsler, *From Images to Dark Matter: End-To-End Inference of Substructure From Hundreds of Strong Gravitational Lenses*, submitted to journal, (2022), arXiv:2203.00690
9. A. Shajib, K. Wong, **S. Birrer**, S. Suyu, T. Treu, E. Buckley-Geer, H. Lin, C. E. Rusu, J. Poh, A. Palmese, A. Agnello, M. W. Auger, A. Galan, S. Schuldt, D. Sluse, F. Courbin, J. Frieman, M. Millon, *TDCOSMO. IX. Systematic comparison between lens modelling software programs: time delay prediction for WGD 2038–4008*, submitted to journal, (2022), arXiv:2202.11101
8. M. Moresco, L. Amati, L. Amendola, **S. Birrer**, J. Blakeslee, M. Cantiello, A. Cimatti, J. Darling, M. Della Valle, M. Fishbach, C. Grillo, N. Hamaus, D. Holz, L. Izzo, R. Jimenez, E. Lusso, M. Meneghetti, E. Piedipalumbo, A. Pisani, A. Pourtsidou, L. Pozzetti, M. Quartin, G. Risaliti, P. Rosati, L. Verde, *Unveiling the Universe with Emerging Cosmological Probes*, Invited review article for Living Reviews in Relativity, (2022), arXiv:2201.07241
7. D. Gilman, A. Benson, J. Bovy, **S. Birrer**, T. Treu, A. Nierenberg, *The primordial matter power spectrum on sub-galactic scales*, submitted to journal, (2021), arXiv:2112.03293
6. R. Morgan, B. Nord, K. Bechtol, S. J. González, E. Buckley-Geer, A. Möller, J. W. Park, A. G. Kim, **S. Birrer**, et al., *DeepZipper: A Novel Deep Learning Architecture for Lensed Supernovae Identification*, submitted to journal, (2021), arXiv:2112.01541
5. A. Akhazhanov, A. More, A. Amini, C. Hazlett, T. Treu, **S. Birrer**, et al., *Finding quadruply imaged quasars with machine learning. I. Methods*, submitted to journal, (2021), arXiv:2109.09781
4. P. L. Kelly, S. Rodney, T. Treu, M. Oguri, W. Chen, A. Zitrin, **S. Birrer**, et al., *Constraints on the Hubble Constant from Supernova Refsdal’s Reappearance Using Blind Lens Models*, under review by Science
3. P. L. Kelly, S. Rodney, T. Treu, **S. Birrer**, et al., *The Magnificent Five Images of Supernova Refsdal: Time Delay and Magnification Measurements*, submitted to The Astrophysical Journal
2. J. H. O’Donnell, R. D. Wilkinson, H. T. Diehl, C. Aros-Bunster, K. Bechtol (5), **S. Birrer**, et al., *The DES Bright Arcs Survey: Candidate Strongly Lensed Galaxy Systems from the Dark Energy Survey 5,000 Sq. Deg. Footprint*, submitted to journal, (2021), arXiv:2110.02418
1. L. de la Bella, A. Amara, **S. Birrer**, W. Hartley, P. Sudek, *Quenching and Galaxy Demographics*, submitted to journal, (2021), arXiv:2110.02418

14. **S. Birrer** S. Dhawan, A. Shajib, *The Hubble Constant from Strongly Lensed Supernovae with Standardizable Magnifications*, The Astrophysical Journal, Volume 924, Issue 1, id.2, 21 pp., (2022), arXiv:2107.12385
13. **S. Birrer**, *Gravitational lensing formalism in a curved arc basis: A continuous description of observables and degeneracies from the weak to the strong lensing regime*, The Astrophysical Journal, Volume 919, Issue 1, id.38, 20 pp. (2021), arXiv:2104.09522
12. **S. Birrer**, A. Shajib, D. Gilman, A. Galan, J. Aalbers, M. Millon, R. Morgan, G. Pagano, J.-W. Park, L. Teodori, N. Tessore, M. Ueland, L. Van de Vyvere, S. Wagner-Carena, E. Wempe, L. Yang, X. Ding, T. Schmidt, D. Sluse, M. Zhang, A. Amara, *lenstronomy II: A gravitational lensing software ecosystem*, Journal of Open Source Software, vol. 6, issue 62, id. 3283 (2021), arXiv:2106.05976
11. **S. Birrer** & T. Treu, *TDCOSMO V: strategies for precise and accurate measurements of the Hubble constant with strong lensing*, Astronomy & Astrophysics, Volume 649, id.A61, 6 pp., (2021), arXiv:2008.06157
10. *** **S. Birrer**, A. J. Shajib, A. Galan, M. Millon, T. Treu et al. *TDCOSMO IV: Hierarchical time-delay cosmography – joint inference of the Hubble constant and galaxy density profiles*, Astronomy & Astrophysics, Volume 643, id.A165, 40 pp. (2020), arXiv:2007.02941
9. **S. Birrer** and T. Treu *Astrometric requirements for strong lensing time-delay cosmography*, Monthly Notices of the Royal Astronomical Society, Volume 489, Issue 2, p.2097-2103 (2019), arXiv:1904.10965
8. *** **S. Birrer**, T. Treu, C. E. Rusu, et al. *H0LiCOW - IX. Cosmographic analysis of the doubly imaged quasar SDSS 1206+4332 and a new measurement of the Hubble constant*, Monthly Notices of the Royal Astronomical Society, Volume 484, Issue 4, p.4726-4753 (2019), arXiv:1809.01274
7. *** **S. Birrer** and A. Amara, *Lenstronomy: multi-purpose gravitational lens modelling software package*, Physics of the Dark Universe, Volume 22, p. 189-201 (2018), arXiv:1803.09746
6. **S. Birrer**, A. Refregier and A. Amara, *Cosmic Shear with Einstein Rings*, The Astrophysical Journal Letters, Volume 852, Issue 1, article id. L14, 4 pp. (2018), arXiv:1710.01303
5. **S. Birrer**, A. Amara and A. Refregier, *Lensing substructure quantification in RXJ1131-1231: a 2 keV lower bound on dark matter thermal relic mass*, Journal of Cosmology and Astroparticle Physics, Issue 05, article id. 037 (2017), arXiv:1702.00009
4. **S. Birrer**, C. Welschen, A. Amara and A. Refregier, *Line-of-sight effects in strong lensing: putting theory into practice*, Journal of Cosmology and Astroparticle Physics, Issue 04, article id. 049 (2017), arXiv:1610.01599
3. **S. Birrer**, A. Amara and A. Refregier, *The mass-sheet degeneracy and time-delay cosmography: analysis of the strong lens RXJ1131-1231*, Journal of

Cosmology and Astroparticle Physics, Issue 08, article id. 020 (2016),
arXiv:1511.03662

2. **S. Birrer**, A. Amara and A. Refregier, *Gravitational Lens Modeling with Basis Sets*, The Astrophysical Journal, Volume 813, Issue 2, article id. 102, 13 pp. (2015), arXiv:1504.07629
1. **S. Birrer**, S. Lilly, A. Amara, A. Paranjape and A. Refregier, *A Simple Model Linking Galaxy and Dark Matter Evolution*, The Astrophysical Journal, Volume 793, Issue 1, article id. 12, 24 pp. (2014), arXiv:1401.3162

Significant contributions as supervisor or co-supervisor

16. *** E. Nadler, **S. Birrer**, D. Gilman, R. H. Wechsler, X. Du, A. Benson, A. M. Nierenberg, T. Treu, *Dark Matter Constraints from a Unified Analysis of Strong Gravitational Lenses and Milky Way Satellite Galaxies*, The Astrophysical Journal, Volume 917, Issue 1, id.7, 20 pp. (2021), arXiv:2101.07810
15. J.W. Park, S. Wagner-Carena, **S. Birrer**, P. J. Marshall, J. Y.-Y. Lin, A. Roodman *Large-Scale Gravitational Lens Modeling with Bayesian Neural Networks for Accurate and Precise Inference of the Hubble Constant*, The Astrophysical Journal, Volume 910, Issue 1, id.39, 22 pp. (2021), arXiv:2012.00042
14. R. Morgan, B. Nord, **S. Birrer**, J. Lin, J. Poh, *deeplensronomy: A dataset simulation package for strong gravitational lensing*, Journal of Open Source Software, vol. 6, issue 58, id. 2854 (2021), arXiv:2102.02830
13. S. Wagner-Carena, J. W. Park, **S. Birrer**, P. M. Marshall, A. Roodman, R. H. Wechsler *Hierarchical Inference With Bayesian Neural Networks: An Application to Strong Gravitational Lensing*, The Astrophysical Journal, Volume 909, Issue 2, id.187, 25 pp. (2021), arXiv:2010.13787
12. F. A. Kuhn, **S. Birrer**, C. Bruderer, A. Amara, A. Refregier, *Combining strong and weak lensing estimates in the Cosmos field*, Journal of Cosmology and Astroparticle Physics, Volume 2021, Issue 04, id.010, 24 pp. (2021), arXiv:2010.08680
11. L. Yang, G. Roberts-Borsani, T. Treu, **S. Birrer**, T. Morishita, M. Bradac *The evolution of the size-mass relation at $z=1-3$ derived from the complete Hubble Frontier Fields data set*, Monthly Notices of the Royal Astronomical Society, Volume 501, Issue 1, pp.1028-1037 (2021), arXiv:2011.10059
10. A. J. Shajib, T. Treu, **S. Birrer**, A. Sonnenfeld, *Dark matter haloes of massive elliptical galaxies at $z \sim 0.2$ are well described by the Navarro-Frenk-White profile*, Monthly Notices of the Royal Astronomical Society, Volume 503, Issue 2, pp.2380-2405, (2021), arXiv:2008.11724
9. D. Gilman, **S. Birrer**, T. Treu *TDCOSMO III: Dark matter substructure meets dark energy – the effects of (sub)halos on strong-lensing measurements of H_0* , Astronomy & Astrophysics, Volume 642, id.A194, 26 pp. (2020), arXiv:2007.01308
8. L. Yang, **S. Birrer**, T. Treu *A versatile tool for cluster lensing source reconstruction. I. methodology and illustration on sources in the Hubble Frontier*

- Field Cluster MACS J0717.5+3745*, Monthly Notices of the Royal Astronomical Society, Volume 496, Issue 3, pp.2648-2662 (2020), arXiv:2001.07719
7. T. Yang, **S. Birrer**, B. Hu, *The first simultaneous measurement of Hubble constant and post-Newtonian parameter from time-delay strong lensing*, Monthly Notices of the Royal Astronomical Society: Letters, Volume 497, Issue 1, pp.L56-L61 (2020), arXiv:1909.02573
 6. A. J. Shajib, **S. Birrer**, ... et al., *STRIDES: a 3.9 per cent measurement of the Hubble constant from the strong lens system DES J0408-5354*, Monthly Notices of the Royal Astronomical Society, Volume 494, Issue 4, pp.6072-6102 (2020), arXiv:1910.06306
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