Prof. Frédéric COURBIN
Geneva/Switzerland | +41 (0)76 77 080 77
frederic.courbin@epfl.ch
github | linkedin

EDUCATION AND EMPLOYMENT HISTORY

PROFESSOR, EPFL (WEB LINK) — *2017-present / Switzerland*

TENURED SENIOR SCIENTIST (MAÎTRE D'ENSEIGNEMENT ET DE RECHERCHE, MER), EPFL — *2009-2016 / Switzerland*

SENIOR SCIENTIST, EPFL — *2004-2009 / Switzerland*

MARIE CURIE INDIVIDUAL FELLOWSHIP, ASTROPHYSICS INSTITUTE, UNIVERSITY OF LIÈGE — *2002-2004 / Belgium*

POSTDOCTORAL FELLOW AT UNIVERSIDAD CATÓLICA DE CHILE (JOINTLY WITH ESO) — *1999-2002 / Chile*

PHD THESIS IN ASTROPHYSICS (HIGHEST HONORS), UNIVERSITY OF LIÈGE — *1996-1999 / Belgium*

OPTIMAL IMAGE DECONVOLUTION AND COMBINATION: APPLICATION TO THE CASE OF STRONG GRAVITATIONAL LENSING

PHD ADVISOR: PROF. P. MAGAIN

ESO STUDENTSHIP AND FRENCH MILITARY SERVICE, GARCHING, GERMANY — *1995 / Germany*

UNIVERSITÉ PIERRE ET MARIE CURIE, PARIS-VI — *1994 / France*

MASTER II (DEA) IN ASTROPHYSICS

UNIVERSITÉ PARIS-XI, ORSAY — *1993 / France*

"MAGISTÈRE DE PHYSIQUE FONDAMENTALE", JOINTLY WITH ENS CACHAN

INSTITUTIONAL RESPONSIBILITIES

MEMBER OF THE EPFL SCHOOL ASSEMBLY — *2020 - 2021*

MEMBER OF THE EPFL SCHOOL COUNCIL FOR BASIC SCIENCES — *2018 - 2021*

FACULTY MEMBER OF THE EPFL PHYSICS INSTITUTE - IPHYS — *2017 - present*

GRADUATE STUDENT MENTOR FOR THE PHYSICS DOCTORAL SCHOOL - EDPY — *2009 - present*

MEMBER OF THE COMMITTEE OF THE EPFL DOCTORAL SCHOOL IN PHYSICS - EDPY — *2009 - present*

APPROVED RESEARCH PROJECTS (ONGOING)

ERC ADVANCED GRANT COSMICLENS (WEB LINK) — *2018 - 2023*

SNSF-SINERGIA *Euclid: high-precision cosmology in the dark sector* — *2021 - 2025*

SNSF *Strong gravitational lensing with wide field and time-domaine surveys* — *2021 - 2025*

TOTAL EXTERNAL FUNDING AT EPFL AS PI: 16 MEURO (12 MEURO SINCE APPOINTED AS PROFESSOR) — *2004 - 2021*

SUPERVISION OF JUNIOR RESEARCHERS

ADVISOR OR CO-ADVISOR OF MORE THAN 50 MASTER STUDENTS — *2004-present*

ADVISOR OR CO-ADVISOR OF 17 PHD STUDENTS — *2004-present*

TRAINED 12 POSTDOCS, INCL. 1 MARIE CURIE FELLOW — *2004-present*

PRIZES AND AWARDS

ERC ADVANCED GRANT COSMICLENS (3.2 MEURO) — *2018*

MARIE CURIE INDIVIDUAL FELLOWSHIP — *2002*

BOELPAEPE PRIZE IN SIGNAL PROCESSING - ROYAL ACADEMY OF SCIENCE, BELGIUM — *1999*

ESO STUDENTSHIP (GARCHING) — *1995*

ACTIVE MEMBERSHIPS IN SCIENTIFIC SOCIETIES

MEMBER OF THE INTERNATIONAL ASTRONOMICAL UNION (IAU) — *2004 - present*

MEMBER OF THE SWISS SOCIETY FOR ASTROPHYSICS AND ASTRONOMY (SSAA) — *2004 - present*

LANGUAGES

ENGLISH (FLUENT) - SPANISH (FLUENT) - FRENCH (MOTHER TONGUE) - GERMAN (BASIC LEVEL)

Teaching activities

MOOC Introduction to Radio-astronomy (Parts I & II) *from 2020*

• This MOOC started on Oct 1, 2020, in collaboration with Prof. J.-P. Kneib and colleagues from the Square Kilometer Array in South Africa. Part II will be released in the spring 2021.

MOOC Introduction to Astrophysics *2014 - present*

• Bachelor level. Over 50'000 students from 136 countries. Since 2017, this MOOC is accessible "on demand" in French and in English. This MOOC covers part of my EPFL Bachelor course (see below). A BOOC is also associated to this MOOC and freely available in French and English.

Dark and Visible Matters (10 students/y) - Doctoral level *2010 - present*

• Also given twice in the framework of the inter-universities CUSO program.

Introduction to Astrophysics (150 students/y) - Bachelor level *2007 - present*

Astrophysics Practical Works (10 students/y) - Master level *2007 - present*

Outreach and events (among many)

Regularly invited for radio and TV shows

Participating in many amateur astronomy events, giving popular science talks

Participation in the TV show L'esprit sorcier *2019*

• Done in the context of the EPFL open days at STCC

Wrote and produced theater play "Poussière d'étoile" - Geneva, Switzerland *2009-2010*

• This was written for the year of astronomy in 2009. The play was given over 2 weeks in Geneva, gathering a large number of schools in the area.

Organisation of observing sessions with disabled children (including mine!) *from 2010*

Membership of panels, boards

Member of the Spanish-led ESA ARRAKIHS mission (leading the coordination with other surveys) *from 2023*

On the board of the European project TITAN on astrophysical signal processing (PI: J.-L- Starck) *2023-2027*

Swiss representative on the ESO STC (Scientific and Technical Committee) *from 2022*

Member of the ISSI Science Committee (International Space Science Institute in Bern) *from 2020*

Member of the LSST consortium *from 2020*

ERC panels INFRAIA, INFRAINNOV, INFRASUPP *2020*

Acquired the "builder" status in the ESA Euclid mission *2020*

Member of the SNSF Ambizione panel *2018 - present*

Member of the French ANR evaluation committee *2017 - 2019*

Member of the French HCERES evaluation committee *2014*

Member of the ESO Observing Program Committee (OPC) *2013-2014*

Reviewer for ERC advanced and starting grants *2013 - present*

ESA Euclid mission: Co-lead of OU-SHE (shear measurements) *2011-present*

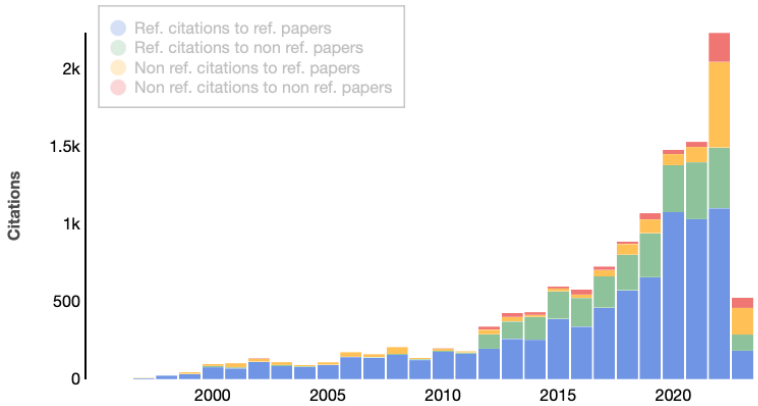
ESA Euclid mission: Responsible for all strong lensing pipelines *2011-present*

Swiss representative at the ESO Users Committee *2006-2009*

Member of the HST Time Allocation Committee *2004-2005*

Publication record

I have published so far 307 papers, out of which 198 are in refereed journals. This led so far to 13300 citations (see below) and an h factor of h=60 according to google scholar. ORCID: 0000-0003-0758-6510



Leadership, impact and training of young scientists

I have enabled time delay cosmography science through the COSMOGRAIL program established when I arrived at EPFL in 2004. This was acknowledged by my ERC AdG COSMICLENS and has transformed the field which accounts now dozens of researchers. Some of them have built their career on follow-up programs of COSMOGRAIL. This work has also allowed me to train bright young scientist who pursue now their careers in academia or in the industry. Of note is Vivien Bonvin, who was invited to the 2019 Lindau-Nobel meeting and who is now a leader in a Swiss start-up focused on machine learning. Marc Gentile became a trader at JP Morgan. D. Sluse is a permanent staff at Liège University. Malte Tewes is a staff at Bonn University, developing the Euclid weak lensing pipeline. Martin Millon is a postdoc in Stanford. Remy Joseph has been a postdoc in Princeton (LSST signal processing) and is now a postdoc in Stockholm. K. Rojas is now a postdoc in Portsmouth. J. Chan is a postdoc at CUNY. Giorgos Vernardos has been a Marie Curie fellow in my group on 2020-22 and will now take up a professorship at CUNY.

Refereed publications

In the following I give only refereed publications, excluding the 23 refereed publication from the Euclid consortium, that I sign by default as a Euclid builder member. Also listed are press-releases and contributions to books, either as editor or chapter contributor or both.

1. *LensWatch: I. Resolved HST Observations and Constraints on the Strongly-Lensed Type Ia Supernova 2022qmx ("SN Zwicky,")*
   Pierel, J. D. R., Arendse, N., Ertl, S., Huang, X., Moustakas, L. A., Schuldt, S., Shajib, A. J., Shu, Y., Birrer, S., Bronikowski, M., Hjorth, J., Suyu, S. H., Agarwal, S., Agnello, A., Bolton, A. S., Chakrabarti, S., Cold, C., **Courbin, F.**, Della Costa, J. M., Dhawan, S., Engesser, M., Fox, O. D., Gall, C., Gomez, S., Goobar, A., Jimenez, C., Johansson, J., Li, G., Marques-Chaves, R., Mao, S., Mazzali, P. A., Perez-Fournon, I., Petrushevska, T., Poidevin, F., Rest, A., Sheu, W., Shirley, R., Silver, E., Storfer, C., Treu, T., Wojtak, R., Zenati, Y., 2023, in press in ApJ
2. *TDCOSMO. XIII. Improved Hubble constant measurement from lensing time delays using spatially resolved stellar kinematics of the lens galaxy*
   Shajib, A. J., Mozumdar, P., Chen, G. C.-F., Treu, T., Cappellari, M., Knabel, S., Suyu, S. H., Bennert, V. N., Frieman, J. A., Sluse, D., Birrer, S., **Courbin, F.**, Fassnacht, C. D.; Villafana, L., Williams, P. R., 2023, in press in A&A (arXiv23010.2656)
3. *The impact of human expert visual inspection on the discovery of strong gravitational lenses*
   Rojas, K., Collett, T. E., Ballard, D., Magee, M. R., Birrer, S., Buckley-Geer, E., Chan, J. H. H., Clement, B., Diego, J. M., Gentile, F., Gonzalez, J., Joseph, R., Mastache, J., Schuldt, S., Tortora, C., Verdugo, T., Verma, A., Daylan, T., Millon, M., Jackson, N., Dye, S., Melo, A., Mahler, G., Ogando, R. L. C., **Courbin, F.**, Fritz, A., Herle, A., Acevedo Barroso, J. A., Canameras, R., Cornen, C., Dhanasingham, B., Glazebrook, K., Martinez, M. N., Ryczanowski, D., Savary, E., Gois-Silva, F., Urena-Lopez, L. A., Wiesner, M. P., Wilde, J., Valim Calcada, G., Cabanac, R., Pan, Y., Sierra, I., Despali, G., Cavalcante-Gomes, M. V., Macmillan, C., Maresca, J., Grudskaia, A., O'Donnell, J. H., Paic, E., Niemiec, A., de la Bella, L. F., Bromley, J., Williams, D. M., in press in A&A, (arXiv2301.03670)
4. *STRIDES: automated uniform models for 30 quadruply imaged quasars*
   Schmidt, T., Treu, T., Birrer, S., Shajib, A. J., Lemon, C., Millon, M., Sluse, D., Agnello, A., Anguita, T., Auger-Williams, M. W., McMahon, R. G., Motta, V., Schechter, P., Spiniello, C., Kayo, I., **Courbin, F.**, Ertl, S., Fassnacht, C. D., Frieman, J. A., More, A., Schuldt, S., Suyu, S. H., Aguena, M., Andrade-Oliveira, F., Annis, J., Bacon, D., Bertin, E., Brooks, D., Burke, D. L., Carnero Rosell, A., Carrasco Kind, M., Carretero, J., Conselice, C., Costanzi, M., da Costa, L. N., Pereira, M. E. S., De Vicente, J., Desai, S., Doel, P., Everett, S., Ferrero, I., Friedel, D., García-Bellido, J., Gaztanaga, E., Gruen, D., Gruendl, R. A., Gschwend, J., Gutierrez, G., Hinton, S. R., Hollowood, D. L., Honscheid, K., James, D. J., Kuehn, K., Lahav, O., Menanteau, F., Miquel, R., Palmese, A., Paz-Chinchón, F., Pieres, A., Plazas Malagón, A. A., Prat, J., Rodriguez-Monroy, M., Romer, A. K., Sanchez, E., Scarpine, V., Sevilla-Noarbe, I., Smith, M., Suchyta, E., Tarle, G., To, C., Varga, T. N., DES Collaboration, 2023, MNRAS 518, 1260
5. *Gravitationally lensed quasars in Gaia - IV. 150 new lenses, quasar pairs, and projected quasars*
   Lemon, C., Anguita, T., Auger-Williams, M. W., **Courbin, F.**, Galan, A., McMahon, R., Neira, F., Oguri, M., Schechter, P., Shajib, A., Treu, T., Agnello, A., Spiniello, C., 2023, MNRAS 520, 3305
6. *Using wavelets to capture deviations from smoothness in galaxy-scale strong lenses*
   Galan, A., Vernardos, G., Peel, A., **Courbin, F.**, Starck, J. -L., 2022, A&A 668, A155
7. *Evidence for a milliparsec-separation supermassive binary black hole with quasar microlensing*
   Millon, M., Dalang, C., Lemon, C., Sluse, D., Paic, E., Chan, J. H. H., **Courbin, F.**, 2022, A&A 668, A77
8. *Search of strong lens systems in the Dark Energy Survey using convolutional neural networks*
   Rojas, K., Savary, E., Clement, B., Maus, M., **Courbin, F.**, Lemon, C., Chan, J. H. H., Vernardos, G., Joseph, R., Canameras, R., Galan, A., 2022, A&A 668, A73
9. *Deep learning-based galaxy image deconvolution*
   Akhaury, U., Starck, J.-L. Jablonka, P., **Courbin, F.**, Michalewicz, K., 2022, FrASS, 901043
10. *TDCOSMO. IX. Systematic comparison between lens modelling software programs: Time-delay predict,ion for WGD 2038-4008*

Shajib, A. J., Wong, K. C., Birrer, S., Suyu, S. H., Treu, T., Buckley-Geer, E. J., Lin, H., Rusu, C. E., Poh, J., Palmese, A., Agnello, A., Auger-Williams, M. W., Galan, A., Schuldt, S., Sluse, D., **Courbin, F.**, Frieman, J., Millon, M., 2022, A&A 667, A123

11. *TDCOSMO. VIII. A key test of systematics in the hierarchical method of time-delay cosmography*
Gomer, M., Sluse, D., Van de Vyvere, L., Birrer, S., **Courbin, F.**, 2022, A&A 667, A86

12. *Ligh,tweight HI source finding for next generation radio surveys*
Tolley, E., Korber, D., Galan, A., Peel, A., Sargent, M. T., Kneib, J. -P., **Courbin, F.**, Starck, J. -L., 2022, A&C, 4100631

13. *Strong lensing in UNIONS: Towa,rd a pipeline from discovery to modeling*
Savary, E., Rojas, K., Maus, M., Clément, B., **Courbin, F.**, Gavazzi, R., Chan, J. H. H., Lemon, C., Vernardos, G., Cañameras, R., Schuldt, S., Suyu, S. H., Cuillandre, J. -C., Fabbro, S., Gwyn, S., Hudson, M. J., Kilbinger, M., Scott, D., Stone, C., 2022, A&A, 666, A157

14. *Cosmology intertwined: A review of the particle physics, astrophysics, and cosmology associated with the cosmological tensions and anomalies*
Abdalla, E., Abellan, G., Aboubrahim, A., **[incl. Courbin, F. + 195 authors]**, 2022, JHEAp, 34, 49A

15. *Discovery of strongly lensed quasars in the Ultraviolet Near Infrared Optical Northern Survey (UNIONS)*
Chan, J. H. H., Lemon, C., **Courbin, F.**, Gavazzi, R., Clement, B., Millon, M., Paic, E., Rojas, K., Savary, E., Vernardos, G., Cuillandre, J. -C., Fabbro, S., Gwyn, S., Hudson, M. J., Kilbinger, M., McConnachie, A., 2022, A&A, 659, A140

16. *Constraining quasar structure using high-frequency microlensing variations and continuum reverberation*
, Paic, E., Vernardos, G., Sluse, D., Millon, M., **Courbin**, F., Chan, J. H., Bonvin, V., 2022, A&A, 659, A21

17. *J1721+8842: a gravitationally lensed binary quasar with a proximate damped Lyα absorber*
Lemon, C., Millon, M., Sluse, D., **Courbin, F.**, Auger, M., Chan, J. H. H., Paic, E., Agnello, A., 2022, A&A, 657, A113

18. *SLITRONOMY: Towards a fully wavelet-based strong lensing inversion technique*
Galan, A., Peel, A., Joseph, R., **Courbin, F.**, Starck, J. -L., 2021, A&A 647, A176

19. *Time Delay Lens modelling Challenge*
Ding, X., Treu, T., Birrer, S., Chen, G. C. -F., Coles, J., Denzel, P., Galan, M. Frigo A., Marshall, P. J., Millon, M., More, A., Shajib, A. J., Sluse, D., Tak, H., Xu, D., Auger, M. W., Bonvin, V., Chand, H., **Courbin, F.**, Despali, G., Fassnacht, C. D. Gilman, D., Hilbert, S., Kumar, S. R., Lin, Y. -Y., Park, J. W., Saha, P., Vegetti, S., Van de Vyvere, L., Williams, L. L. R., 2021, MNRAS, 503, 1096

20. *Measuring accretion disk sizes of lensed quasars with microlensing time delay in multi-band light curves*
Chan, J. H. H., Rojas, K., Millon, M., **Courbin, F.**, Bonvin, V., Jauffret, G., 2021, A&A 647, A115

21. *TDCOSMO IV: Hierarchical time-delay cosmography – joint inference of the Hubble constant and galaxy density profiles*
Birrer, S., Shajib, A. J., Galan, A., Millon, M., Treu, T., Agnello, A., Auger, M., Chen, G. C. -F., Christensen, L., Collett, T., **Courbin, F.**, Fassnacht, C. D., Koopmans, L. V. E., Marshall, P. J., Park, J. -W., Rusu, C. E., Sluse, D., Spiniello, C., Suyu, S. H., Wagner-Carena, S. Wong, K. C., Barnabe, M., Bolton, A. S., Czoske, O., Ding, X., Frieman, J. A., Van de Vyvere, L., 2020, A&A 643, A165

22. *HOLISMOKES – I. Highly Optimised Lensing Investigations of Supernovae, Microlensing Objects, and Kinematics of Ellipticals and Spirals*
Suyu, S. H., Huber, S., Canameras, R., Schuldt, S., Taubenberger, S., Yildirim, A., Bonvin, V., Chan, J. H. H., **Courbin, F.**, Kromer, M., Nöbauer, U., Sim, S. A., Sluse, D., 2020, A&A 644, A162

23. *H0LiCOW XIII. A 2.4% measurement of H_0 from lensed quasars: 5.3σ tension between early and late-Universe probes*
Wong, K.C., Suyu, S.H., Chen, G.C.-F., Rusu, C.E., Millon, M., Sluse, D., Bonvin, V., Fassnacht, C.D., Taubenberger, S., Auger, M.W., Birrer, S., Chan, J.H.H., **Courbin, F.**, Hilbert, S., Tihhonova, O., Treu, T., Agnello, A., Ding, X., Jee, I., Komatsu, E., Shajib, A.J., Sonnenfeld, A., Blandford, R.D., Koopmans, L.V. E., Marshall, P. J., Meylan, G., 2020, MNRAS 498, 1420

24. *H0LiCOW XII. Lens mass model of WFI2033-4723 and blind measurement of its time-delay distance and H_0*
Rusu, C.E., Wong, K.C., Bonvin, V., Sluse, D., Suyu, S.H., Fassnacht, C.D., Chan, J.H.H., Hilbert, S., Auger, M.W., Sonnenfeld, A., Birrer, S., **Courbin, F.**, Treu, T., Chen, G.C.-F., Halkola, A., Koopmans, L.V. E., Marshall, P.J., Shajib, A.J., 2020, MNRAS 498, 1440

25. *H0LiCOW XI. A weak lensing measurement of the external convergence in the field of the lensed quasar B1608+656 using HST and Subaru deep imaging*
Tihhonova, O., **Courbin, F.**, Harvey, D., Hilbert, S., Peel, A., Rusu, C. E., Fassnacht, C. D., Bonvin, V., Marshall, P. J., Meylan, G., Sluse, D., Suyu, S. H., Treu, T., Wong, K. C., 2020, MNRAS 498, 1406

26. *TDCOSMO II: 6 new time delays in lensed quasars from high-cadence monitoring at the MPIA 2.2m telescope*
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., 2020, A&A 642, A193

27. *Cosmic dissonance: are new physics or systematics behind a short sound horizon?*
Arendse, N., Wojtak, R.J., Agnello, A., Chen, G.C.-F., Fassnacht, C.D., Sluse, D., Hilbert, S., Millon, M., Bonvin, V., Wong, K.C., **Courbin, F.**, Suyu, S.H., Birrer, S., Treu, T., Koopmans, L.V. E., 2020, A&A, 639, A57

28. *Shear measurement bias. I. Dependencies on methods, simulation parameters, and measured parameters*
Pujol, A., Sureau, F., Bobin, J., **Courbin, F.**, Gentile, M., Kilbinger, M., 2020, A&A, 641, A164

29. *COSMOGRAIL. XIX. Time delays in 18 strongly lensed quasars from 15 years of optical monitoring*
Millon, M., **Courbin, F.**, Bonvin, V., Paic, E., Meylan, G., Tewes, M., Sluse, D., Magain, P., Chan, J. H. H., Galan, A., Joseph, R., Lemon, C., Tihhonova, O., Anderson, R. I., Marmier, M., Chazelas, B., Lendl, M., Triaud, A. H. M. J., Wyttenbach, A., 2020, A&A, 640, A105

30. *A Microlensing Accretion Disk Size Measurement in the Lensed Quasar WFI 2026-4536*
Cornachione, M.A., Morgan, C.W., Millon, M., Bentz, M.C., **Courbin, F.**, Bonvin, V., Falco, E.E., 2020, ApJ, 895, 125

31. *TDCOSMO. I. An exploration of systematic uncertainties in the inference of H_0 from time-delay cosmography*
Millon, M., Galan, A., **Courbin, F.**, Treu, T., Suyu, S. H., Ding, X., Birrer, S., Chen, G. C. -F., Shajib, A. J., Wong, K. C., Agnello, A., Auger, M. W., Buckley-Geer, E. J., Chan, J. H. H., Collett, T., Fassnacht, C. D., Hilbert, S., Koopmans, L. V. E., Motta, V., Mukherjee, S. Rusu, C. E., Sluse, D., Sonnenfeld, A., Spiniello, C., Van de Vyvere, L., 2020, A&A, 639, A101

32. *The STRong lensing Insights into the Dark Energy Survey (STRIDES) 2017/2018 follow-up campaign: discovery of 10 lensed quasars and 10 quasar pairs*
Lemon, C., Auger, M. W., McMahon, R., Anguita, T., Apostolovski, Y., Chen, G. C. -F., Fassnacht, C. D., Melo, A. D., Motta, V., Shajib, A., Treu, T., Agnello, A., Buckley-Geer, E., Schechter, P. L., Birrer, S., Collett, T., **Courbin, F.**, Rusu, C. E., Abbott, T. M. C., Allam, S. Annis, J., Avila, S., Bertin, E., Brooks, D., Burke, D. L., Carnero Rosell, A., Carrasco Kind, M., Carretero, J., Costanzi, M., da Costa, L. N., De Vicente, J., Desai, S., Eifler, T. F., Flaugher, B., Frieman, J., García-Bellido, J., Gaztanaga, E., Gerdes, D. W., Gruen, D., Gruendl, R. A., Gschwend, J., Gutierrez, G., Honscheid, K., James, D. J., Kim, A., Krause, E., Kuehn, K., Kuropatkin, N., Lahav, O., Lima, M., Lin, H., Maia, M. A. G., March, M., Marshall, J. L., Menanteau, F., Miquel, R., Palmese, A., Paz-Chinchón, F., Plazas, A. A., Roodman, A., Sanchez, E., Schubnell, M., Serrano, S., Smith, M., Soares-Santos, M., Suchyta, E., Tarle, G., Walker, A. R., 2020, MNRAS, 494, 3491

33. *Twisted quasar light curves: implications for continuum reverberation mapping of accretion disks*
Chan, J. H. -H., Millon, M., Bonvin, V., **Courbin, F.**, 2020, A&A, 636, A52

34. *STRIDES: a 3.9 per cent measurement of the Hubble constant from the strong lens system DES J0408-5354*
Shajib, A. J., Birrer, S., Treu, T., Agnello, A., Buckley-Geer, E. J., Chan, J. H. H., Christensen, L., Lemon, C., Lin, H., Millon, M., Poh, J., Rusu, C. E., Sluse, D., Spiniello, C., Chen, G. C. -F., Collett, T., **Courbin, F.**, Fassnacht, C. D., Frieman, J., Galan, A. Gilman, D., More, A., Anguita, T., Auger, M. W., Bonvin, V., McMahon, R., Meylan, G., Wong, K. C., Abbott, T. M. C., Annis, J., Avila, S., Bechtol, K., Brooks, D., Brout, D., Burke, D. L., Carnero Rosell, A., Carrasco Kind, M., Carretero, J., Castander, F. J., Costanzi, M., da Costa, L. N., De Vicente, J., Desai, S., Dietrich, J. P., Doel, P., Drlica-Wagner, A., Evrard, A. E., Finley, D. A., Flaugher, B., Fosalba, P., García-Bellido, J., Gerdes, D. W., Gruen, D., Gruendl, R. A., Gschwend, J., Gutierrez, G., Hollowood, D. L., Honscheid, K., Huterer, D., James, D. J., Jeltema, T., Krause, E., Kuropatkin, N., Li, T. S., Lima, M., MacCrann, N., Maia, M. A. G., Marshall, J. L., Melchior, P., Miquel, R., Ogando, R. L. C., Palmese, A., Paz-Chinchón, F., Plazas, A. A., Romer, A. K., Roodman, A., Sako, M., Sanchez, E., Santiago, B., Scarpine, V., Schubnell, M., Scolnic, D., Serrano, S., Sevilla-Noarbe, I., Smith, M., Soares-Santos, M., Suchyta, E., Tarle, G., Thomas, D., Walker, A. R., Zhang, Y., 2020, MNRAS, 494, 6072

35. *Exploiting flux ratio anomalies to probe warm dark matter in future large-scale surveys*
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36. *Weak-lensing shear measurement with machine learning. Teaching artificial neural networks about feature noise*
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175. *Photometric monitoring (1987 to 1994) of the gravitational lens candidate UM 425.*
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Contributions to Books

1. *Time-Delay Cosmography: Measuring the Hubble Constant and other cosmological parameters with strong, gravitational lensing*
Birrer, S. , Millon, M. , Sluse, D. , Shajib, A. J. , **Courbin, F.**, Koopmans, L. V. E. , Suyu, S. H. , Treu, T., 2023, to appear in Space Science Reviews as a chapter of the ISSI-Bern book "Strong Gravitational Lensing". See arXiv2210.10833

2. *Strong Gravitational Lensing*
Conveners of this ISSI-Bern book: Wambsganss, J., **Courbin, F.**, Falanga, M., McMahon, R., Suyu, S., Williams, L., Schechter, P., Natarayan, P.. To be publised in Space Science Reviews in 2024. In addition of being a co-editor of the book, I am a co-author on 2 chapters.

3. *Toward an Internally Consistent Astronomical Distance Scale*
de Grijs, R., **Courbin, F.**, Martinez-Vazquez, C.E., Monelli, M., Oguri, M., Suyu, S., 2017, Space Science Reviews, Volume 212, Issue 3-4, pp. 1743-1785

4. *Cosmological Distance Indicators*
Suyu, S., Chang, T.-C., **Courbin, F.**, Okumura, T., 2018, Space Science Reviews, Volume 214, Issue 5, article id. 91, 34 pp

5. *Quasar Lensing*
F. Courbin, P. Saha, P. Schechter, 2003: 60 pages review on quasar lensing, LNP Topical Volume 608 (Springer-Verlag), F. Courbin & D. Minniti Eds. (see also astro-ph/0208043)

Press-releases (web links are in blue)

1. January 2020 *Cosmic magnifying glasses yield independent measure of the Universe's expansion.* NASA-ESA press release in connection with the paper by 2020, in press in MNRAS (arXiv1907.04869)

2. January 2017: *Cosmic lenses support finding on faster than expected expansion of the Universe.* NASA-ESA press release in connection with the paper by Bonvin et al. (2017, MNRAS, 465, 4914). This PR, led by my PhD student V. Bonvin, was extremely successful, with articles and interviews by the NY times, Le Figaro, Science, Le Temps, The Sun, The Guardian, among others, and a broad coverage in popular science journals from many countries.

3. October 2017: *Hubble discovers "wobbling galaxies".* NASA-ESA press release in connection with the paper with my SNSF sinergia postdoc David Harvey (2017, MNRAS, 472, 1972), where we detect wobbling of the central galaxy in dynamically relaxed galaxy clusters from X-ray and HST observations and strong gravitational lensing. This may indicate that dark matter does have a non-zero cross section.

4. March 2012: *Astronomers Using NASA's Hubble Discover Quasars Acting as Gravitational Lenses.* NASA-ESA press release in connection with the paper by Courbin et al. (2012, A&A 540, 36).

5. July 2010: *A galaxy magnified by a quasar.* Joint Joint EPFL/Caltech press release in connection to the paper by Courbin et al. (2010, A&A 516, L12) about the very first case of strong lensing by a quasar.

6. December 2008: *Astronomers Dissect a Supermassive Black Hole with Natural Magnifying Glasses*. ESO press-release in connection with the EPFL PhD thesis of Alexander Eigenbrod about VLT spectrophotomonitoring of the Einstein Cross to measure the energy profile of the accretion disk.

7. January 2007: *Discovery of the first triple quasar*. Joint Keck/EPFL/Nature press-release in connection with Djorgovski et al. (2007, ApJ 662, L1), about the discorvery a physical triplet of quasars.

8. September 2005: *Black Hole in Search of a Home: Astronomers Discover Bright Quasar Without Massive Host Galaxy*. Joint ESO/ESA/Nature press-release in connection with Magain et al. (2005, Nature 437, 381).

9. July 2003: *Discovery of quadruply lensed quasar with Einstein ring.* ESO press release in connection with Sluse et al. (2003, A&A 406, L43) about the discovery of a lensed quasar that now turn out a vital one for cosmology.

10. July 1997: *Hints about dark light-bending matter in the distant Universe: new infrared observations of a gravitational lens.* ESO Press-release 09/97 about the discovery of the lens galaxy in a bright lensed quasar: Courbin et al. (1998, A&A 330, 57).