

Martin MILLON

PERSONAL DATA

DATE OF BIRTH: 4 September 1993
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RESEARCH POSITION

2022-NOW Visiting Postdoctoral Researcher, Kavli Institute for Particle Astrophysics and Cosmology (KIPAC), **Stanford University**
2021-2022 Postdoctoral Researcher, Laboratory of Astrophysics, **EPFL**

EDUCATION

2017-2021 **Ph.D. in Observational Cosmology, Laboratory of Astrophysics, EPFL**
PhD Thesis: "Time-delay Cosmography with Strongly Lensed Quasars"
Advisor: Prof. Frédéric COURBIN
2014-2016 **Master of Science in APPLIED PHYSICS, EPFL**
Master Thesis: "Source/lens separation: application to the Hubble Frontier Fields"
Advisor: Prof. Frédéric COURBIN
2013-2014 **Third year of Bachelor in exchange, Imperial College London**
Bachelor Thesis: "Dust in Local Galaxies from Herschel, Planck, ISO and IRAS"
Advisor: Dr. Dave CLEMENTS
Diploma awarded: Imperial College International Diploma
2011-2014 **Bachelor of Science in PHYSICS, EPFL,**

WORK EXPERIENCE

2015-2016 **R&D Engineer Intern at CSEM (9 months), Basel**
"Optimization and characterization of optical components for space instruments"
Conception and test of diffraction gratings developed for the European Space Agency

TEACHING EXPERIENCE

Fall 2017-2021 Astrophysics Practical Work, PhD teaching assistant, (5 semesters)
Spring 2018-2020 Astrophysics I, PhD teaching assistant (3 semesters)
Spring 2016 General Physics IV, Student teaching assistant
Spring 2015 Physics laboratory work, Student teaching assistant
Fall 2014 General Physics I, Student teaching assistant
Spring 2013 General Physics II, Student teaching assistant
Fall 2012 General Physics I, Student teaching assistant

MENTORING

2023 - now	Everett McArthur , Postbac Student, Stanford University
2022 - now	Sydney Erickson , PhD Student, Stanford University
Spring 2022	Kevin Michalewicz , Master thesis, Universidad de Buenos Aires & IMT Atlantique “High resolution deconvolution: an application to astrophysical imaging”
Spring 2021	Sophie Stucki , Semester thesis, EPFL “Studying Black Hole accretion disks with Convolutional Neural Networks”
Spring 2021	Yann Carteret , Semester thesis, EPFL “Measuring the Hubble Constant with lensed supernovae”
Spring 2020	Mark Maus , Semester thesis, EPFL “Measuring the Size of Quasar Accretion Disks Using Reverberation Mapping”
Spring 2020	Bastian Lengen , Semester thesis and summer internship, EPFL “Assessing the reliability of current curve-shifting techniques for time-delay cosmology”
Spring 2020	Soumiya Sheeram , Semester thesis, EPFL “Classifying the Source Radius from Microlensing Light Curves using Neural Networks”
2019 - 2020	Petra Awad , Specialization & Master thesis, EPFL “Improbability of Stellar Distributions as the Cause of Microlensing Signals for Gravitationally Lensed Quasars”
Spring 2019	Eric Paic , Master thesis, EPFL “Measurement of the radius of lensed quasar QJ0158-4325 using the power spectrum of the microlensing curve”
Spring 2019	Camille Arruat , semester thesis, EPFL “Measuring the size of black holes’ accretion disks from Reverberation Mapping”
Spring 2018	Julien Dhur , high-school thesis, EPFL “Searching for quasars in the COSMOGRAIL monitoring data”
Spring 2018	Aymeric Galan (Master thesis, EPFL) “Assessing the reliability of strong lensing modeling tools for time-delay cosmography”

GRANT & AWARD

JUNE 2020	Swiss National Science Foundation (SNSF) Postdoc Mobility Fellowship “Time-delay cosmography in the LSST era”. Research mobility grant at Stanford University.
OCT. 2016	Gilbert Hausmann Award Attributed for a Master project that stands out through its excellence, in the field of mechanical engineering, electrical engineering or physics. Prize: 5000 CHF

OBSERVING EXPERIENCE

2017-2022	Leonhard Euler 1.2m Swiss Telescope, La Silla, Chile, 57 nights Imaging of lensed quasars and spectroscopy for exoplanets research.
Apr. 2021	Nordic Optical Telescope, La Palma, Canary Islands, 2 nights Spectroscopic confirmation of newly discovered lensed quasars.
2017-2018	MPIA 2m2 telescope, La Silla, Chile, 9 nights Imaging of lensed quasars. 2 observing runs in total.
Nov. 2019	Vatican Advanced Technology Telescope, Mount Graham, USA, 2 nights Test imaging of lensed quasars.

SELECTED TALKS AND SEMINARS

<i>Sept. 2023</i>	KIPAC@20 conference, Stanford, USA, contributed talk. “A rare case of strong lensing by a quasar”
<i>Aug. 2023</i>	Lensing at different scales: strong, weak, and synergies between the two, Chicago, USA, invited review talk. “Cosmology with strong lensing”
<i>June 2023</i>	IAUS 381: Strong gravitational lensing in the era of Big Data, Otranto, Italy, contributed talk. “Strong gravitational lensing by AGNs as a probe of the quasar–host relations in the distant Universe”
<i>Apr. 2023</i>	Stony Brook University seminar, New York, USA, seminar talk. “Measuring the Hubble Constant with strongly lensed quasar”
<i>Nov. 2022</i>	University of Chicago open group seminar, Chicago, USA, online seminar talk. “Zooming in on quasar accretion disks with gravitational microlensing”
<i>Oct. 2022</i>	KIPAC Tea Talk, Stanford, USA, seminar talk. “Zooming in on quasar accretion disks with gravitational microlensing”
<i>July 2022</i>	ISSI workshop, Bern, Switzerland, seminar talk . “Evidence for a milliparsec-separation supermassive binary black hole with quasar microlensing”
<i>June 2022</i>	LASTRO Tea Talk, Geneva, Switzerland, seminar talk. “Evidence for a milliparsec-separation supermassive binary black hole with quasar microlensing”
<i>Sept. 2021</i>	Lensing Odyssey conference, Kouremenos, Greece, invited talk. “Extrinsic variability in strongly lensed quasars”
<i>Sept. 2021</i>	USM lensing group seminar, Munich, Germany, online seminar. “Time-delay cosmography with strongly lensed quasars”
<i>July 2021</i>	IAS seminar, Paris, France, seminar talk. “Measuring the Hubble Constant with strongly lensed quasars”
<i>Mar. 2021</i>	A (Hubble) tension headache, Online Conference, invited talk. “Time-delay cosmography with Strongly Lensed quasars”
<i>Jan. 2021</i>	Time-domain Cosmology with Strong Gravitational Lenses, Online Conference, contributed talk. “The COSMOGRAIL project: past, on-going and future lensed quasars monitoring campaigns”
<i>Nov. 2019</i>	KIPAC Tea Talk, Stanford, USA, seminar talk. “High-cadence monitoring for a precise measurement of the Hubble Constant”
<i>June 2019</i>	HOLiCOW collaboration meeting, DARK, Copenhagen, Denmark, working group presentation. “Lens Monitoring at Euler, VST and MPIA 2m2 telescope”
<i>Feb. 2019</i>	Cosmic Beacons workshop, Sexten, Italy, contributed talk. “New strategies in lens monitoring for a precise measurement of the Hubble Constant”
<i>Sept. 2018</i>	The Universe as a telescope (conference), Milan, Italy, contributed talk. “Impact of the 3D source geometry on time-delay measurements of lensed type-Ia Supernovae”
<i>July 2018</i>	The extragalactic distance ladder in the Gaia era (workshop), MIAPP, Munich, Germany, contributed talk. “Lens monitoring and time-delay estimation for a one step measurement of H_0 ”
<i>June 2018</i>	Research seminar, MPIA, Munich, Germany, seminar talk. “Impact of microlensing on the time-delay measurements of lensed quasars and Supernovae”
<i>May 2018</i>	HOLiCOW collaboration meeting, UCLA, USA, working group presentation. “Microlensing time delays in lensed Supernovae.”

ACCEPTED OBSERVING PROPOSALS

May 2023	James Webb Space Telescope Cycle 2 proposal, Co-I, PI: T.Treu “The Hubble constant at 1.9% from spatially resolved kinematics of gravitational lens”
July 2022	Hubble Space Telescope Cycle 30 proposal, Co-I, PI: C. Lemon “Time-delay Cosmography with Strongly Lensed Quasars: Doubles vs. Quads”
Sept. 2021	NTT/EFOSC2 proposal, Co-I, PI: C. Lemon “Exploring optical quasar variability from intraday to monthly rest-frame timescales”
July 2021	Chandra Cycle 23 proposal, Co-I, PI: D. Pooley. “Nano-arcsecond Tomography of the Central Regions of the Quasar in SDSS J0924+0219”
Sept. 2020	Subaru-FOCAS proposal, Co-I, PI: K. Wong. “Spectroscopy of Lensed Quasars for Time-Delay Cosmography”
Sept. 2020	NOT-ALFOSC proposal, Co-I, PI: C. Lemon. “Spectroscopic Confirmation of Northern Lensed Quasars”
April 2020	VLT-MUSE proposal, Co-I, PI: A. Agnello. “Two percent uncertainties in the Hubble constant with lensed quasars and MUSE-WFM”
March 2020	LCO Key Projects proposal, Co-I, PI: C-F. Chen. “High-cadence Lens Monitoring for Time-Delay Cosmography”
Sept. 2019	VLT-MUSE and VLT-FORS2 proposal, Co-I, PI: D. Sluse. “Environment of time-delay lensed quasars monitored at ESO for high accuracy cosmography”
April 2019	NOT-ALFOSC proposal, Co-I, PI: C. Lemon. “Spectroscopic Confirmation of the Brightest Lensed Quasars in the North”
Sept. 2018	VST-OMEGACAM proposal, Co-I, PI: F. Courbin. “High-cadence Lens Monitoring for Time Delay Cosmography”

PUBLIC OUTREACH

June 2023	EPFL and KIPAC press releases “How to precisely weigh a quasar’s host galaxy”
May. 2023	Public observations, Stanford University
Apr. 2023	KIPAC Community Day, Stanford University
2017-2022	Public tours/Public observation, Observatory of Geneva
Nov. 2020	SLAC/Stanford press release “Gravitational lenses could hold the key to better estimates of the expansion of the universe”
July 2020	Participation to the HoliCOW outreach Youtube video
Jan. 2020	EPFL/HST press release “Cosmic magnifying glasses show faster expanding universe”
Sept. 2019	Esprit sorcier, participation in a science TV show, EPFL
Sept. 2019	EPFL Open-days, demonstrator, EPFL
Nov. 2018	Journée des Métiers, demonstrator, Palexpo, Geneva


TECHNICAL SKILLS


Programming languages: Python, C++, PHP, \LaTeX


Astronomical softwares: SExtractor, Lenstronomy

Other frameworks/softwares: Keras/TensorFlow, JAX

Other skills: Software Development, cluster computing

Lead developer of the deconvolution Python package STARRED 

Lead developer of the time-delay measurement Python package PyCS3 

Contributing developer for the lens modelling software LENSTRONOMY 

OTHERS

Collaboration memberships: TDCOSMO, COSMOGRAIL, HoliCOW, STRIDES, LSST Strong Lensing Science Collaboration, LSST Dark Energy Science Collaboration, DESI

Journal referee: Nature, A&A, ApJ, MNRAS, JCAP