UNIVERSITÀ DEGLI STUDI DI MILANO

TO MAGNIFICO RETTORE OF UNIVERSITA' DEGLI STUDI DI MILANO ID CODE 5352

I the undersigned asks to participate in the public selection, for qualifications and examinations, for the awarding of a type B fellowship at **Dipartimento di Fisica "Aldo Pontremoli" dell'Università degli Studi di Milano**

Scientist- in – charge: Prof. Claudio Grillo

SCHULDT STEFAN

CURRICULUM VITAE

PERSONAL INFORMATION

Surname	Stefan
Name	Schuldt

PRESENT OCCUPATION

Appointment	**Structure**
March 2022 – Aug. 2022	Post-doctoral researcher at the Max-Planck Institute for Astrophysics

EDUCATION AND TRAINING

Degree	**Course of studies**	**University**	**year of achievement of the degree**
Degree			
Specialization			
PhD (summa cum laude)	Physics	Technical University of Munich (TUM)	2022
Master (passed with high distinction	Physics (Nuclear, Particle and Astrophysics)	Technical University of Munich (TUM)	2018
Degree of medical specialization	-	-	-
Degree of European specialization	-	-	-
Bachelor (passed with merit)	Physics	Technical University of Munich (TUM)	2015

REGISTRATION IN PROFESSIONAL ASSOCIATIONS

Date of registration	**Association**	**City**
June 07, 2021	LSST DESC (Rubin Observatory Legacy Survey of Space and Time Dark Energy Science Collaboration)	International collaboration
Jan. 19, 2021	ePESSTO+ (Public ESO Spectroscopic Survey of Transient Objects)	International collaboration, headquarter ESO in Garching bei München, Germany
May 07, 2020	TDCOSMO (Time-Delay Cosmography)	International collaboration
June 01, 2018	HOLISMOKES (Highly Optimised Lensing Investigations of Supernovae, Microlensing Objects, and Kinematics of Ellipticals and Spirals)	International collaboration, PI in Garching bei München, Germany

FOREIGN LANGUAGES

Languages	**level of knowledge**
German	Mother tongue
English	fluent
Spanish	basics

AWARDS, ACKNOWLEDGEMENTS, SCHOLARSHIPS

Year	**Description of award**
-	-

TRAINING OR RESEARCH ACTIVITY

Observing supernovae with a 1.22-meter telescope; between Feb. 27, 2019 and March 06 2019, at the Osservatorio Astrofisico di Asiago (Asiago, Italy) / University of Padua (Padua, Italy)
Part-Time student trainee work on a neutron live time experiment, between Nov. 2014 and Feb. 2016, at the Technical University of Munich , Chair Hadronic Structure and Fundamental Symmetries (Garching bei München, Germany)
Student trainee work on a neutron live time experiment; between Sept. 07, 2015 and Sept. 12, 2015, at the Institut Laue-Langevin (Grenoble, France)

PROJECT ACTIVITY

Year	**Project**
2018-2022	"Machine Learning Strong Lensing" (PhD thesis)
2017-2018	"The inner dark matter distribution of the Cosmic Horseshoe with gravitational lensing and dynamics" (Master thesis)
2015	"Construction of a flexible absorber and optimization of a polarizer for ultra-cold neutrons" (Bachelor thesis)

PATENTS

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CONGRESSES AND SEMINARS

Date	**Title**	**Place**
May 30 – June 1, 2022	Conference "Machine Learning for Astrophysics", contributed video and poster "Machine learning investigations for LSST: Strong lens mass modeling and photo-z estimation"	Catania, Italy, joined remotely
May 16 – May 20, 2022	Conference "SciOps 2022: Artificial Intelligence for Science and Operations in Astronomy", contributed talk "Machine learning investigations for LSST: Strong lens mass modeling and photo-z estimation"	ESO, Garching, Germany
Nov. 2, 2021	Lunch seminar talk "Strong lens modeling through deep learning for LSST"	online at Leiden, Netherlands
Oct. 18 - Oct. 22, 2021	Conference "Debating the potential of machine learning in astronomical surveys", contributed poster and video "Deep learning applications for LSST"	Paris, France
Oct. 5, 2021	invited talk "Ground based strong lens modeling through deep learning"	Euclid lensing telecon, online
Sept. 20 - Sept. 24, 2021	Workshop "Lensing Odyssey 2021", joint invited talk "Wavelets, Machine Learning, and Autodiff in Lensing" with Aymeric Galan and Austin Peel	Crete, Greece
Feb. 18, 2021	invited talk "Photometric Redshift Estimation with a Convolutional Neural Network: NetZ"	LSST DESC PZ telecon, online
Jan. 25 - Feb. 2, 2021	Conference "Time domain cosmology with strong gravitational lensing", contributed video "Efficient mass modeling of strong lenses through deep learning"	online

Oct. 19, 2020	seminar talk “Efficient Mass Modeling of Strong Lenses through Deep Learning”	MPA Institute seminar, Garching, Germany
March 10, 2020	invited talk “The inner dark matter distribution of the Cosmic Horseshoe with gravitational lensing and dynamics”	DM connector Day, Garching, Germany
June 17 - June 21, 2019	Conference “Strong gravitational lensing by galaxies and clusters”, contributed talk “Strong Lens Mass Modeling with Machine Learning”	Isle of Skye, Scotland
Oct. 21 - Nov. 1, 2018	Visit Perimeter Institute, seminar talk “The inner dark matter distribution of the Cosmic Horseshoe with gravitational lensing and dynamics”	Waterloo, Canada
Sept. 2 - Sept. 9, 2018	Conference “The Universe as a telescope: probing the cosmos at all scales with strong lensing”, contributed talk “The inner dark matter distribution of the Cosmic Horseshoe with gravitational lensing and dynamics”	Milan, Italy
Feb. 5, 2016	Absolventenfeier (graduation ceremony) TUM, contributed talk “Bau eines beweglichen Absorbers und Optimierung eines Polarisators für ultra-kalte Neutronen”	Garching, Germany

PUBLICATIONS

Books
-

Articles in reviews
“TDCOSMO XI. Automated Modeling of 9 Strongly Lensed Quasars and Comparison Between Lens Modeling Software”; submitted to collaboration wide review, June **2022**, S. Ertl, **S. Schuldt**, S. H. Suyu, T. Schmidt, T. Treu, S. Birrer, A. J. Shajib, and D. Sluse
“HOLISMOKES X. Comparison between neural network and semi-automated traditional modeling of strong lenses”; submitting to A&A in June **2022**, Astronomy and Astrophysics; **S. Schuldt**, S. H. Suyu, R. Cañameras, Y. Shu, S. Taubenberger , S. Ertl, and A. Halkola.
“HOLISMOKES IX. Neural network inference of strong-lens parameters and uncertainties from ground-based images”; submitted to A&A, June **2022**, Astronomy and Astrophysics; **S. Schuldt**, R. Cañameras, Y. Shu, S. H. Suyu, S. Taubenberger, T. Meinhardt, and L. Leal-Taixé.

"STRIDES: Automated uniform models for 30 quadruply imaged quasars"; submitted to MNRAS, June **2022**, Monthly Notices of the Royal Astronomical Society; T. Schmidt, T. Treu, S. Birrer, A. J. Shajib, C. Lemon, M. Millon, D. Sluse, A. Agnello, T. Anguita, M. W. Auger-Williams, R. G. McMahon, V. Motta, P. Schechter, C. Spiniello, I. Kayo, F. Courbin, S. Ertl, C. D. Fassnacht, J. A. Frieman, A. More, S. **Schuldt**, S. H. Suyu, M. Aguena, F. Andrade-Oliveira, J. Annis, D. Bacon, E. Bertin, D. Brooks, D. L. Burke, A. Carnero Rosell, M. Carrasco Kind, J. Carretero, C. Conselice, M. Costanzi, L. N. da Costa, M. E. S. Pereira, J. De Vicente, S. Desai,P. Doel, S. Everett, I. Ferrero, D. Friedel, J. García-Bellido, E. Gaztanaga, D. Gruen, R. A. Gruendl, J. Gschwend, G. Gutierrez, S. R. Hinton, D. L. Hollowood, K. Honscheid, D. J. James, K. Kuehn, O. Lahav, F. Menanteau, R. Miquel, A. Palmese, F. Paz-Chinchón, A. Pieres, A. A. Plazas Malagón, J. Prat, M. Rodriguez-Monroy, A. K. Romer,E. Sanchez, V. Scarpine, I. Sevilla-Noarbe, M. Smith, E. Suchyta, G. Tarle, C. To, and T. N. Varga.
"HOLISMOKES VIII. High-redshift Strong Lens Candidates from the Hyper Suprime-Cam Subaru Strategic Program"; A&A, 662, A4, June **2022**, Astronomy and Astrophysics; Y. Shu, R. Cañameras, **S. Schuldt**, S. H. Suyu, S. Taubenberger, K. Taro Inoue, and A. T. Jaelani.
"Observations of the Very Young Type Ia Supernova 2019np with Early-excess Emission."; accepted by MNRAS, June **2022**, Monthly Notices of the Royal Astronomical Society; H. Sai, X. Wang, Y. Yang, W. Lin, J. Mo, X. Zeng, N. Elias-Rosa, W. Li, J. Zhang, A. Piro, A. Reguitti, A. Fiore, M. D. Stritzinger, K. Itagaki, S. Yang, L. Tomasella, Y. Cai, **S. Schuldt**, J. Isern, C. Vogl, M. Shahbandeh, P. Brown, C. R. Burns, E. Y. Hsiao, M. Phillips, P. Pessi, and L. Wang.
"Close, bright and boxy: the superluminous SN 2018hti"; MNRAS 512-3, May **2022**, Monthly Notices of the Royal Astronomical Society; A. Fiore, S. Benetti, M. Nicholl, A. Reguitti, E. Cappellaro, S. Campana, S. Bose, E. Paraskeva, E. Berger, T. M. Bravo, J. Burke, Y.-Z. Cai, T.-W. Chen, P. Chen, R. Ciolfi, S. Dong, S. Gomez, M. Gromadzki, C. P. Gutiérrez, D. Hiramatsu, G. Hosseinzadeh, D. A. Howell, A. Jerkstrand, E. Kankare, A. Kozyreva, K. Maguire, C. McCully, P. Ochner, C. Pellegrino, G. Pignata, R. S. Post, N. Elisa-Rosa, M. Shahbandeh, **S. Schuldt,** B. P. Thomas, L. Tomasella, J. Vinkó, C. Vogl, J. C. Wheeler, and D. R. Young.
"Constraining the multi-scale dark-matter distribution in CASSOWARY 31 with strong gravitational lensing and stellar dynamics."; submitted to A&A, March **2022**, Astronomy and Astrophysics; H. Wang, R. Cañameras, G. B. Caminha, S. H. Suyu, A. Yıldırım, G. Chirivì, L. Christensen, C. Grillo, and **S. Schuldt**
"TDCOSMO. IX. Systematic comparison between lens modelling software programs: time delay prediction for WGD 2038−4008"; submitted to A&A, Feb. **2022**, Astronomy and Astrophysics, A. J. Shajib, K. C. Wong, S. Birrer, S. H. 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, and M. Millon.
"A search for galaxy-scale strong gravitational lenses in the Ultraviolet Near Infrared Optical Northern Survey (UNIONS)"; accepted by A&A, Oct. **2021**, Astronomy and Astrophysics, E. Savary, K. Rojas, M. Maus, B. Clément, F. Courbin, R. Gavazzi, J. H. H. Chan, C. Lemon, G. Vernardos, R. Cañameras , **S. Schuldt**, S. H. Suyu, J.-C. Cuillandre, S. Fabbro, S. Gwyn, M. J. Hudson, M. Kilbinger, D. Scott, and C. Stone.
"HOLISMOKES VI. New galaxy-scale strong lens candidates from the HSC-SSP imaging survey"; A&A 653, L6, Sept. **2021**, Astronomy and Astrophysics; R. Cañameras, **S. Schuldt,** Y. Shu, S. H. Suyu, S. Taubenberger, T. Meinhardt, L. Leal-Taixé, D. C.-Y. Chao, K. T. Inoue, A. T. Jaelani, and A. More.
"Photometric redshift estimation with a convolutional neural network: NetZ"; A&A 651, A55, June **2021**,

Astronomy and Astrophysics; **S. Schuldt**, S. H. Suyu, R. Cañameras, S. Taubenberger, T. Meinhardt, L. Leal-Taixé, and B. C. Hsieh.
"HOLISMOKES IV. Efficient mass modeling of strong lenses through deep learning"; A&A 646, A126, Feb. **2021**, Astronomy and Astrophysics; **S. Schuldt**, S. H. Suyu, T. Meinhardt, L. Leal-Taixé, R. Cañameras, S. Taubenberger, and A. Halkola.
"HOLISMOKES II. Identifying galaxy-scale strong gravitational lenses in Pan-STARRS using convolutional neural networks"; A&A 644, A163, Dec. **2020**, Astronomy and Astrophysics; R. Cañameras, **S. Schuldt**, S. H. Suyu, S. Taubenberger, T. Meinhardt, L. Leal-Taixé, C. Lemon, K. Rojas, and E. Savary.
"HOLISMOKES I. Highly Optimised Lensing Investigations of Supernovae, Microlensing Objects,and Kinematics of Ellipticals and Spirals."; A&A 644, A162, Dec. **2020**, Astronomy and Astrophysics; S. H. Suyu, S. Huber, R. Cañameras, M. Kromer, **S. Schuldt**, S. Taubenberger, A. Yıldırım, V. Bonvin, J. H. H. Chan, F. Courbin, U. Nöbauer, S. Sim, and D. Sluse
"Inner dark matter distribution of the Cosmic Horseshoe (J1148+1930) with gravitational lensing and dynamics"; A&A 631:A4, Nov **2019**, Astronomy and Astrophysics; **S. Schuldt**, G. Chirivì, S. H. Suyu, A. Yıldırım, A. Sonnenfeld, A. Halkola, and G. F. Lewis.

Congress proceedings
"Machine learning investigations for LSST: Strong lens mass modeling and photo-z estimation", Springer book series ASSP, in prep.

TEACHING AND SUPERVISION

Date	**Project**
Summer 2022 - present	Co-supervision bachelor student
Winter 2019/20 - present	Co-supervision master/Ph.D. student
winter 2019/20	Co-supervision master student
winter 2018/19	Tutor for master course "Extragalactic Astrophysics"
summer 2019	Tutor for master course "Gravitational Lensing"

Declarations given in the present curriculum must be considered released according to art. 46 and 47 of DPR n. 445/2000.

The present curriculum does not contain confidential and legal information according to art. 4, paragraph 1, points d) and e) of D.Lgs. 30.06.2003 n. 196.

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Place and date: Munich, 24.06.2022

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