Curriculum vitae

Personal Data	
Name	Martin **Fally**, Univ. Doz. Mag. Dr.
Address	Boltzmanng. 5, A-1090 Wien (*University*)
Phone	+43-1-4277x727 10 (*University*)
E-mail	Martin.Fally@univie.ac.at
Website	http://homepage.univie.ac.at/Martin.Fally/
Year of Birth	1967 in Neunkirchen, Austria
Nationality	Austrian

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Education, Appointments and Professional Activities	
1985	Matura/Sachsenbrunn (equivalent to high school diploma)
1985 – 1991	Study of Mathematics & Physics, University of Vienna
06/04/1991	Mag. rer. nat. (equivalent M. Sc.); Physics & Mathematics, teacher education programme (hons.)
19/04/1996	Dr. rer. nat. (equivalent Ph.D.) in Physics (hons.)
1993 – 2003	Universitätsassistent at the Institut für Experimentalphysik
31/01/2003	Habilitation in *Solid State Physics* at the University of Vienna
01/03/2003–	Ao. Univ.- Prof. at the Institut für Experimentalphysik/Fakultät für Physik, Universität Wien (equivalent to Associate Professor)
2003 – 2004	Mercator-Visiting Professor at the Fachbereich Physik, Universität Osnabrück, Germany (DFG-Programme of excellence)
2006 – 2007	Paternity leave
2015 – 2016	Vice-Dean of the Faculty of Physics, University of Vienna
2016 – 2018	Vice-Dean of the Faculty of Physics
2018 – 2020	Dean of the Faculty of Physics
2020 – 2022	Dean of the Faculty of Physics

- **Focus of Research**: Neutron optics and interferometry based on holographically patterned nonlinear optical media, neutron diffraction and diffraction theories, materials science (photorefractive crystals, polymer-liquid crystal composites, polymer-nanoparticle composites)
- Authored or co-authored 1 **patent**, 4 **book chapters** and about 90 **publications** in renowned international journals covering the fields of holography, neutron diffraction, photorefractive materials, holographic techniques, diffraction theories, interferometry
- **Courses** on solid state physics, photonics, optical materials, diffraction, tensorial properties of crystals, holographic storage media. Leading of laboratory work, course of crystal physics.

  (Co-)Supervision of Graduate Students and Postdoctoral Fellows:
  3 PostDocs; 2(1) PhD; 9(4) diploma/master students (University of Vienna, Osnabrück University)
- **Projects**: Leader, principal investigator and collaborator in more than 10 projects funded by the Austrian science fund, the EC, the Austrian Ministry for Science and others.
  Total: $>$1 MEUR.
- **deputy spokesperson** of the group 'Physics of Functional Materials' (2013-18), **mentor** for women in physics, **managing board member** of Chemical Physical Society (2011-13), **chair/board member** of the 'ILL Beirat' (Austrian Academy of Sciences), **member** of Faculty of Physics 'Mittelbaukurie' & Fakultätskonferenz (2013-14)

Funding Academic recognitions Cooperation partners Publications

1 Research projects

1.1 Funding by the Austrian Research Promotion Agency (FFG) (Applicant & Principal investigator)

⋆ **FO999896034**: *Neutron Experiments on Quantum States at Pico Scale - "NeqstPi" (Quantum Austria)*
lifetime 2023-2025
Consortia: Technische Universität Wien, Atominstitut;Istituto Nazionale di Ricerca Metrologica (INRiM); Institut Laue Langevin; Universität Wien, Fakultät für Physik (M Fally, J Klepp)

1.2 Funding by the Austrian Science Fund FWF (Applicant & Principal investigator)

⋆ **P-15642**: *Photorefraction in centrosymmetric crystals*
lifetime 2002-2006

⋆ **P-18988**: *Holographic polymer-dispersed liquid crystals for photonics*
lifetime 2006-2010

1.3 Funding by the Austrian Science Fund FWF (Investigator)

⋆ **P-14614**: *A neutron interferometer built of holographic gratings*
lifetime 2001-2004

⋆ **P-20265**: *Light-induced structures for (ultra)cold neutron optics*
lifetime 2008-2013

1.4 Funding by the European Union (FP4) (Investigator)

⋆ **INTAS 97-366**: *Photo-excited states in magnetic garnets*
Coordinator of a consortia with 8 partners from Germany, France, Ukraine, Uzbekistan, and Austria
lifetime 1999-2001

1.5 Funding by the Austrian Ministry (Principal Investigator)

Seven 2-years projects on *photorefractive materials, photo-polymerizable liquid crystalline media, elastomers, super-paramagnetic nanoparticle polymer composites*…with partners from Slovenia and Hungary (2001-2012).

2 Academic recognitions

2.1 Invited Lectures (selected)

[1] SPIE. Photonics Europe, Strasbourg, France (8 – 10/04/2024)

[2] SPIE. Optics+Optoelectronics, Prague, Czech Republic (24 – 27/04/2023)

[3] SPS/OePG. Meeting of the Swiss and Austrian Physical societies, Zurich, Switzerland (26 – 29/08/2019)

[4] Frühjahrestagung der Deutschen Phys. Ges., Dresden, Germany (31/03 – 04/04/2014)

[5] Universitat d'Alacant, Alicante, Spain (09 –10/10/2013)

[6] Information Photonics 2011, Ottawa, Canada (18 – 20/05/2011)

2.2 Academic awards

[1] Förderungspreis der Stadt Wien im Bereich Naturwissenschaften (2001)
https://www.geschichtewiki.wien.gv.at/F%C3%B6rderungspreis_(der_Stadt_Wien)#Mathematik.2C_Informatik.2C_Naturwissenschaft.2C_Technik_.28seit_1991.29

[2] Mercator Gastprofessor (Exzellenzprogramm der DFG) at the Fachbereich Physik, Universität Osnabrück, Germany (2003/04)

2.3 Editorship – peer review activities – memberships 2013–

[1] Special Issue **Editor**: 'Advanced Materials for Modern Holographic Applications' (Materials, 2012)

[2] **Peer reviewer (25 Journals)**: Phys.Rev. Lett., Phys. Rev. B; Opt. Express, Opt. Lett., Opt. Mat., Appl. Opt., J. Opt. Soc. Am. (A, B), J. Mod. Opt., Opt. Commun., Opt. Mat. Express, J. Lightwave Technol., J. Opt.; Appl. Phys. B, J. Phys.:Condens. Matt., Acta Phys. Polon., Appl. Phys. Lett., J. Appl. Phys., Phys. Scripta, Polymer Bull., Int. J. Polymer Sc., Materials, Polymers, Sol. Energy, Superlattice Microst.

[3] Reviewer for EC-INTAS (–2006) and DFG-grants

[4] Board member of chemisch-physikalische Gesellschaft 2011-13 (chemical physical society managing board member)

[5] Faculty member of the Vienna Doctoral school (VDS), member of the: Austrian physical society (ÖPG), chemical physical society (CPG) & Optical Society of America (OSA).

3 Key international cooperation partners 2013–

⋆ J. Stefan Institut, Ljubljana, Slovenia: polymer dispersed liquid crystals, liquid crystal elastomers, superparamagnetic nanoparticle polymer composites (I. Drevenšek-Olenik, A. Mertelj, M. Čopič)

⋆ University for Electrocommunications, Chofu-Tokyo, Japan: nanoparticle-polymer composites (Y. Tomita)

⋆ Institut Laue-Langevin, Grenoble, France: very cold neutron facility (T. Jenke, H. Filter, P. Geltenbort)

⋆ Istituto Nazionale di Astrofisica, Merate, Italy: super efficient gratings for light and neutrons (A. Bianco)

4a Peer reviewed publications – M. Fally

[96] E. Hadden, M. Fally, Y. Iso, T. Jenke, J. Klepp, A. Kume, K. Umemoto, and Y. Tomita. *Holographic nanodiamond–polymer composite grating with unprecedented slow-neutron refractive index modulation amplitude*. Appl. Phys. Lett. **124**, 071901 (2024). doi:10.1063/5.0186753.
https://doi.org/10.1063/5.0186753

[95] S. S. Lahijani, T. Jenke, C. Pruner, J. Klepp, and M. Fally. *Multilayer volume holographic gratings from Bay-Fol HX: light and neutron optical characteristics*. In: A. Fimia and M. Hrabovský, eds., *Holography: Advances and Modern Trends VIII*, vol. 12574, 1257403. International Society for Optics and Photonics, Proc. SPIE (2023). doi:10.1117/12.2665169.

[94] M. Fally. *Diffraction theories for off–Bragg replay: J. T. Sheridan's seminal work and consequences*. Asian J. Phys. **32** (2023).
https://asianjournalofphysics.com/volume-32-no-8-aug-2022-8/

[93] E. Hadden, Y. Iso, A. Kume, K. Umemoto, T. Jenke, M. Fally, J. Klepp, and Y. Tomita. *Nanodiamond-based nanoparticle-polymer composite gratings with extremely large neutron refractive index modulation*. In: R. R. McLeod, I. P. Villalobos, Y. Tomita, and J. T. Sheridan, eds., *Photosensitive Materials and their Applications II*, vol. 12151, 1215109–1. Proc. SPIE (2022). doi:10.1117/12.2623661.

[92] M. Fally, Y. Tomita, A. Fimia, R. Madrigal, J. Guo, J. Kohlbrecher, and J. Klepp. *Experimental determination of nanocomposite grating structures by light- and neutron-diffraction in the multi-wave-coupling regime*. Opt. Express **29**, 16153 (2021). doi:10.1364/OE.424233.

[91] G. Heuberger, J. Klepp, J. Guo, Y. Tomita, and M. Fally. *Light diffraction from a phase grating at oblique incidence in the intermediate diffraction regime*. Appl. Phys. B **127**, 72 (2021). doi:https://doi.org/10.1007/s00340-021-07620-x.

[90] Y. Tomita, A. Kageyama, Y. Iso, K. Umemoto, A. Kume, M. Liu, C. Pruner, T. Jenke, S. Roccia, P. Geltenbort, M. Fally, and J. Klepp. *Fabrication of nanodiamond-dispersed composite holographic gratings and their light and slow-neutron diffraction properties*. Phys. Rev. Applied **14**, 044056 (2020). doi:10.1103/PhysRevApplied.14.044056.

[89] Y. Tomita, A. Kageyama, Y. Iso, K. Umemoto, M. Liu, J. Klepp, C. Pruner, T. Jenke, P. Geltenbort, and M. Fally. *Nanodiamond-polymer composite gratings as diffractive optical elements for light and neutrons ii: neutron optical diffraction properties*. In: R. R. McLeod, I. P. Villalobos, Y. Tomita, and J. T. Sheridan, eds., *Photosensitive Materials and their Applications*, vol. 11367, 113670M. SPIE Proc. (2020). doi:10.1117/12.2555651.

[88] M. Fally, J. Klepp, C. Pruner, T. Jenke, P. Geltenbort, A. Kageyama, Y. Iso, K. Umemoto, M. Liu, and Y. Tomita. *Nanodiamond-polymer composite gratings as diffractive optical elements for light and neutrons i: their fabrication and light optical diffraction properties*. In: R. R. McLeod, I. P. Villalobos, Y. Tomita, and J. T. Sheridan, eds., *Photosensitive Materials and their Applications*, vol. 11367, 113670N. SPIE Proc. (2020). doi:10.1117/12.2555474.

[87] P. Flauger, M. A. Ellabban, G. Glavan, J. Klepp, C. Pruner, T. Jenke, P. Geltenbort, and M. Fally. *Light- and neutron-optical properties of holographic transmission gratings from polymer-ionic liquid composites with submicron grating spacing*. Polymers **11**, 1459 (2019). doi:10.3390/polym11091459.

[86] M. Fally, J. Klepp, M. A. Ellabban, H. Eckerlebe, P. K. Pranzas, J. Guo, and Y. Tomita. *Retrieving the refractive index profile of a holographic grating by diffraction experiments*. In: M. Hrabovský, J. T. Sheridan, and A. Fimia, eds., *Holography: Advances and Modern Trends VI*, 11030, 110300I. SPIE Proc. (2019). doi:10.1117/12.2527317.

[85] M. Blaickner, B. Demirel, I. Drevenšek-Olenik, M. Fally, P. Flauger, P. Geltenbort, Y. Hasegawa, R. Kurinjimala, M. Ličen, C. Pruner, S. Sponar, Y. Tomita, and J. Klepp. *Monte-carlo simulation of neutron transmission through nanocomposite materials for neutron-optics applications*. Nucl. Instrum. Methods Phys. Res., Sect. A **916**, 154 (2019). doi:10.1016/j.nima.2018.11.074.
https://ui.adsabs.harvard.edu/abs/2019NIMPA.916..154B

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[82] M. A. Ellabban, G. Glavan, J. Klepp, and M. Fally. *A comprehensive study of photorefractive properties in poly(ethylene glycol)dimethacrylate - ionic liquid composites*. Materials **10**, 9 (2017). doi:http://dx.doi.org/10.3390/ma10010009.

[81] M. A. Ellabban, G. Glavan, P. Flauger, J. Klepp, and M. Fally. *Properties of diffraction gratings holographically recorded in poly(ethylene glycol)dimethacrylate-ionic liquid composites*. In: M. Hrabovský, J. T. Sheridan, and A. Fimia, eds., *Holography: Advances and Modern Trends V*, vol. 10233, 1023310. SPIE Proc. (2017). doi:10.1117/12.2264231.

[80] M. Ličen, I. Drevenšek-Olenik, L. Čoga, S. Gyergyek, S. Kralj, M. Fally, C. Pruner, P. Geltenbort, U. Gasser, G. Nagy, and J. Klepp. *Neutron diffraction from superparamagnetic colloidal crystals*. J. Phys. Chem. Solids **110**, 234 (2017). doi:10.1016/j.jpcs.2017.05.002.

[79] M. Prijatelj, M. A. Ellabban, M. Fally, V. Domenici, M. Čopič, and I. Drevenšek-Olenik. *Peculiar behaviour of optical polarization gratings in light-sensitive liquid crystalline elastomers*. Opt. Mater. Express **6**, 961 (2016). doi:10.1364/OME.6.000961.

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