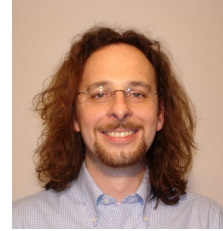


Matthias D. Frontzek

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Curriculum Vitae

Personal data

Name:	Matthias D. Frontzek
Place of birth:	Limburg a. d. Lahn
Citizenship:	German
Family status:	married

Education

09/1997 – 07/2003

Physics study at the Technical University Dresden

08/2003 – 08/2009

PhD in physics in the workgroup of Prof. M. Loewenhaupt at the Technical University Dresden on "*Magnetic properties of R_2PdSi_3 ($R =$ heavy rare earth) compounds*"

Work experience

08/2003 – 12/2009

Scientific associate in the institute of solid state physics at the Technical University Dresden

12/2009 – 02/2012

Post-doctoral research associate at the Spallation-Neutron source, Oak Ridge National Laboratory in the Quantum Condensed Matter group

03/2012 – 08/2015

Post-doctoral research associate at the Paul Scherrer Institut in the Laboratory for Neutron Scattering and Imaging as second instrument responsible on the cold neutron diffractometer DMC

01/2016 – now

Scientist at the Oak Ridge National Laboratory in the Quantum Condensed Matter Division as instrument responsible on the Wide Angle Neutron Diffractometer WAND²

Professional qualification

Scattering methods:

- Elastic and inelastic neutron scattering in high magnetic fields (up to 15 T) and at low temperatures (down to 50 mK)
- Resonant magnetic x-ray scattering

Experiments conducted at:

CNCS, BASIS and SEQUOIA, SNS, ORNL, Oak Ridge
HB1 and HB3A, HFIR, ORNL Oak Ridge
DCS and BT-7, NIST, Gaithersburg
D23, D2B, D1B and D4, ILL, Grenoble
6T2, LLB, Saclay
DMC, HRPT, FOCUS, SANS-2, TASP, EIGER, TriCS, PSI, Villigen
PANDA, FRM-2, Munich
SV-29, FZJ, Jülich
E2, V15, HZB, Berlin
mu-cat 6 and BL 15, APS, Argonne
ID-20, ID-28, ESRF, Grenoble

Laboratory methods:

- Experiments in pulsed-magnetic fields at the NHMFL, Los Alamos
- Measurement of magnetization, ac-susceptibility and magnetostriction

Teaching experience:

- Supervision of a student's project to build an ac-susceptibility setup for the $^3\text{He}/^4\text{He}$ dilution fridge
- Supervision of students during their laboratory practical
- Taught students in experimental techniques in their basic practical
- Hold seminars for students as a stand-in on experimental physics

Fellowships / Grants

PSI-Fellow funded through European Community's Seventh Framework Programme (FP7/2007-2013) under Grant Agreement No. 290605
Co-proposer on the ANR/SNF project SECTOR - Structural-induced electronic complexity controlled by low temperature topotactic reactions

Languages

Fluent English in word and speech
Rudimentarily French in word and speech

IT skills

Knowledge in data processing and data evaluation
Basics in programming (C++, Python)

Publications

- Magnetic properties of Tb₂PdSi₃*, **M. Frontzek**, A. Kreyssig, M. Doerr, J.-U. Hoffman, D. Hohlwein, H. Bitterlich, G. Behr, M. Loewenhaupt, *Physica B* **350** (2004) e187
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- Magneto-crystalline anisotropy in R₂PdSi₃ (R = Tb, Dy, Ho, Er, Tm) single crystals*, **M. Frontzek**, A. Kreyssig, M. Doerr, M. Rotter, G. Behr, W. Löser, I. Mazilu, M. Loewenhaupt, *J. Magn. Magn. Mat.* **301** (2006) 398
- Frustration in R₂PdSi₃ (R = Tb, Er) compounds: Spin-glass or magnetic short range order? Neutron diffraction studies*, **M. Frontzek**, A. Kreyssig, M. Doerr, A. Schneidewind, J.-U. Hoffman, M. Loewenhaupt, *J. Phys.: Condens. Matter* **19** (2007) 145276
- Giant magnetostrain based on strong single ion anisotropy of rare earth materials*, M. Doerr, S. Raasch, M. Rotter, **M. Frontzek**, D. C. Meyer, T. Leisegang, M. Zschintzsch, P. Svoboda, M. Loewenhaupt, *EPJ ST* **158** (2008) 125
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- Intergrowth of several solid phases from the Y-Ni-B-C system in a large YNi₂B₂C crystal*, T. Weissbach, T. Leisegang, A. Kreyssig, **M. Frontzek**, J.-U. Hoffmann, D. Souptel, A. Köhler, G. Behr, P. Paufler, D. C. Meyer, *J. Appl. Cryst.* **41**, (2008) 738
- Electronic Structure and Nesting-Driven Enhancement of the RKKY Interaction at the Magnetic Ordering Propagation Vector in Gd₂PdSi₃ and Tb₂PdSi₃*, D. S. Inosov, D. V. Evtushinsky, A. Koitzsch, V. B. Zabolotnyy, S. V. Borisenko, A. A. Kordyuk, **M. Frontzek**, M. Loewenhaupt, W. Löser, I. Mazilu, H. Bitterlich, G. Behr, J.-U. Hoffmann, R. Follath, B. Büchner, *Phys. Rev. Lett.* **102** (2009) 046401
- Magnetic properties of R₂PdSi₃ (R = heavy rare earth) compounds*, **M. Frontzek**, Cuvillier Verlag Goettingen, (2009) ISBN-13: 9783869551029
- Crystal growth of the Pr₂PdSi₃ intermetallic compound*, Xu Y, Löser W, Behr G, **M. Frontzek**, F. Tang, B. Büchner, L. Liu, *J. Crystal Growth* **312** (2010) 1992-1996

- Correlation between crystallographic superstructure and magnetic structures in finite magnetic fields: A neutron study on a single crystal of Ho_2PdSi_3* , **M. Frontzek**, F. Tang, P., A. Schneidewind, J.-U. Hoffman, J.-M. Mignot, M. Loewenhaupt, *Phys. Rev. B* **82** (2010) 174401
- Neutron diffraction study of magnetic structures in single crystal Ho_2PdSi_3 in magnetic fields up to 5 T*, F. Tang, P. Link, **M. Frontzek**, J.-M. Mignot, J.-U. Hoffmann, W. Loeser, M. Loewenhaupt, *J. Phys.: Conf. Ser.* **251** (2010) 012017
- Magnetic excitations of Er_2PdSi_3 studied by inelastic neutron scattering in fields up to 12 T*, F. Tang, P. Link, **M. Frontzek**, A. Schneidewind, W. Loeser, M. Loewenhaupt, *J. Phys.: Conf. Ser.* **251** (2010) 012004
- A Generic Phase Diagram for $R_2\text{PdSi}_3$ ($R = \text{Heavy Rare Earth}$)?*, **M. Frontzek**, F. Tang, P. Link, A. Schneidewind, J.-M. Mignot, J.-U. Hoffman, M. Loewenhaupt, *J. Phys.: Conf. Ser.* **251** (2010) 012026
- Floating zone crystal growth of selected $R_2\text{PdSi}_3$ ternary silicides*, Y. Xu, **M. Frontzek**, I. Mazilu, W. Löser, G. Behr, B. Büchner, L. Liu, *J. Crystal Growth*, **318** (2011) 942
- Effect of carrier doping on the formation and collapse of magnetic polarons in lightly hole-doped $\text{La}_{1-x}\text{Sr}_x\text{CoO}_3$* , A. Podlesnyak, G. Ehlers, **M. Frontzek**, A. S. Sefat, A. Furrer, Th. Strässle, E. Pomjakushina, K. Conder, F. Demmel, D. I. Khomskii, *Phys. Rev. B* **83** (2011) 134430
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- Magnetic structure of CuCrO_2 : a single crystal neutron diffraction study*, **M. Frontzek**, G. Ehlers, A. Podlesnyak, H. Cao, M. Matsuda, O. Zaharko, N. Aliouane, S. Barilo, S. V. Shiryayev, *J. Phys.: Condens. Matter* **24** (2012) 016004
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Magnetic ground state of the Ising-like antiferromagnet DyScO₃, Wu, L. S., S. E. Nikitin, **M. Frontzek**, A. I. Kolesnikov, G. Ehlers, M. D. Lumsden, K. A. Shaykhutdinov, E.-J. Guo, A. T. Savici, Z. Gai, A. S. Sefat, A. Podlesnyak, Phys. Rev. B **96** (2017) 144407

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