

AG Kuch
Scientific Activity Report 2006

Scientists:

Abrudan, Radu M.

Bernien, Matthias

Eckhold, Philipp (since 01.10.2006)

Kuch, Wolfgang

Kurde, Julia (until 30.09.2006)

Lenz, Kilian

Miguel, Jorge

Piantek, Marten

Rocker, Jan (from 01.06.2006)

Stampe, Miriam (from 01.10.2006)

Wende, Heiko

Zander, Sebastian (until 30.04.2006)

Publications:

P. Aleshkevych, M. Baran, V. Dyakonov, R. Szymczak, H. Szymczak, K. Baberschke, J. Lindner, and K. Lenz

Bulk and surface spin excitations in thin films of manganites
phys. stat. sol. (a) **203**, 1586–1594 (2006).

P. Aleshkevych, M. Baran, V. Dyakonov, R. Szymczak, H. Szymczak, K. Baberschke, J. Lindner, and K. Lenz

Surface Magnetic Anisotropy of Epitaxial $\text{La}_{0.7}\text{Mn}_{1.3}\text{O}_{2.84}$ Thin Films
Acta Phys. Pol. A **110**, 57–70 (2006).

J. Camarero, J. Miguel, J. Vogel, F. Romanens, S. Pizzini, F. Garcia, J. Sort, B. Dieny, N. B. Brookes, and J. B. Goedkoop

Magnetization reversal, asymmetry, and role of uncompensated spins in perpendicular exchange coupled systems

Appl. Phys. Lett. **89**, 232507-1–3 (2006).

K. Fukumoto, W. Kuch, J. Vogel, F. Romanens, S. Pizzini, J. Camarero, M. Bonfim, and J. Kirschner

Dynamics of Magnetic Domain Wall Motion after Nucleation: Dependence on the Wall Energy

Phys. Rev. Lett. **96**, 097204-1–4 (2006).

S. Konings, J. Miguel, J. Camarero, J. Vogel and J. B. Goedkoop

Magnetic domain pinning in an anisotropy-engineered GdTbFe thin film

J. Appl. Phys. **100**, 033904-1–7 (2006)

W. Kuch, L. I. Chelaru, F. Offi, J. Wang, M. Kotsugi, and J. Kirschner

Tuning the magnetic coupling across ultrathin antiferromagnetic films by controlling atomic-scale roughness

Nature Mater. **5**, 128–133 (2006).

W. Kuch

Magnetic imaging

in: Magnetism: A Synchrotron Radiation Approach, edited by E. Beaurepaire, H. Bulou, F. Scheurer, J.-P. Kappler, Springer (Berlin 2006), p. 275–320.

K. Lenz, H. Wende, W. Kuch, K. Baberschke, K. Nagy, and A. Jánossy

Two-magnon scattering and viscous Gilbert-damping in ultrathin ferromagnets

Phys. Rev. B **73**, 144424-1–6 (2006).

K. Lenz, E. Kosubek, K. Baberschke, J. Herfort, H.-P. Schönherr, and K. H. Ploog

Magnetic anisotropy and resonance linewidth of Fe₃Si/GaAs(001)

phys. stat. sol. (c) **3**, 122–125 (2006).

J. Miguel, J. F. Peters, O. M. Toulemonde, S. S. Dhesi, N. B. Brookes, and J. B. Goedkoop

X-ray resonant magnetic scattering study of magnetic stripe domains in α -GdFe thin films

Phys. Rev. B **74**, 094437-1–10 (2006).

F. Romanens, J. Vogel, W. Kuch, K. Fukumoto, J. Camarero, S. Pizzini, M. Bonfim, and F. Petroff

Influence of topography and Co domain walls on the magnetization reversal of the FeNi layer in FeNi/Al₂O₃/Co magnetic tunnel junctions

Phys. Rev. B **74**, 184419-1–9 (2006).

C. Sorg, N. Ponpandian, M. Bernien, K. Baberschke, H. Wende, and R. Q. Wu

Induced magnetism of oxygen in surfactant-grown Fe, Co, and Ni monolayers

Phys. Rev. B **73**, 064409-1–7 (2006).

C. Tieg, W. Kuch, S. G. Wang, and J. Kirschner

Growth, structure, and magnetism of single-crystalline Ni_xMn_{100-x} films and NiMn/Co bilayers on Cu(001)

Phys. Rev. B **74**, 094420-1–10 (2006).

H. Wende, C. Sorg, M. Bernien, A. Scherz, P. J. Jensen, N. Ponpandian, and K. Baberschke

Spin fluctuations in coupled two-dimensional magnetic trilayers

phys. stat. sol. (b) **243**, 165–168 (2006).

Kh. Zakeri, Th. Kebe, J. Lindner, C. Antoniak, M. Farle, K. Lenz, T. Tolinski, and K. Baberschke
Magnetic anisotropy in nanoscaled materials probed by ferromagnetic resonance
Phase Transitions **79**, 793–813 (2006).

Presentations:

a) invited talks

W. Kuch

Layer-resolved domain imaging of magnetization reversal dynamics in magnetically coupled trilayers

Workshop „Dynamics of spin and magnetic momenta probed by photoemission and absorption“, Kaiserslautern, 19.–20.01.2006.

W. Kuch

Magnetische Kopplung über nichtferromagnetische Zwischenschichten und Photoelektronenbeugung an magnetischen Proben

Winter Workshop “Ultrafast Phenomena”, Sölden, Austria, 02.–05.02.2006.

W. Kuch

Magnetic imaging using x-ray magnetic circular dichroism or the magneto-optical Kerr effect
International Workshop “Organizing and Addressing Molecules on Surfaces”, Platja d’Aro, Spain, 24.–28.05.2006.

W. Kuch

X-ray absorption spectroscopy studies of magnetic properties of adsorbed molecules and thin films

Physikalisches Kolloquium der Technischen Universität Chemnitz, 21.06.2006.

W. Kuch

Magnetic dichroism in valence band photoemission

Bereichskolloquium, Bereich A, Max-Born-Institut, Berlin, 04.07.2006.

W. Kuch

XMCD-PEEM domain imaging of single-crystalline FM/AF/FM trilayers

Summer School “Spintronics in Ultrasoother Films”, Durham, U.K., 09.–14.07.2006.

W. Kuch, F. Offi, L. I. Chelaru, J. Wang, K. Fukumoto, M. Kotsugi, J. Kirschner, and J. Kunes

Investigating the interaction between single-crystalline antiferromagnetic FeMn films and ferromagnets by layer-resolved magnetic imaging

PhotoEmission Electron Microscopy (PEEM) Workshop, Diamond Light Source, Oxfordshire, U.K., 11.–12.07.2006.

W. Kuch

Magnetization dynamics in ultrathin magnetic trilayers

Kurzseminar “Mikromagnetismus”, Fachbereich Mathematik, Humboldt-Universität zu Berlin, 02.08.2006.

W. Kuch

Studies of magnetic nanostructures and adsorbed molecules using synchrotron radiation
Materials Science and Engineering School, University of Science and Technology Beijing,
P. R. China, 18.08.2006.

W. Kuch

Investigating static and dynamic magnetic interlayer coupling by layer-resolved magnetic
domain imaging
International Conference on Magnetism (ICM 2006), Kyoto, Japan, 20.–25.08.2006.

W. Kuch

X-ray absorption spectroscopy for the investigation of magnetic films and molecules
Department of Physics, Fudan University, Shanghai, P. R. China, 28.08.2006.

W. Kuch

The Role of Atomic-Scale Interface Roughness for the Magnetic Coupling across
Antiferromagnetic Films
25th BESSY Users' Meeting, Berlin, 07.–08.12.2006.

C. Tieg, R. M. Abrudan, M. Bernien, S. G. Wang, W. Kuch, and J. Kirschner
Growth, structure, and magnetism of single-crystalline NiMn films and NiMn/Co bilayers on
Cu(001)
European Synchrotron Radiation Facility, Grenoble, France, 11.04.2006.

H. Wende

Magnetische Nanostrukturen im neuen Licht
Sonderkolloquium, Institut für Angewandte Physik, Universität Hamburg, 02.02.2006.

H. Wende

Magnetische Nanostrukturen im neuen Licht
Institut für Werkstoffwissenschaft, Fakultät für Maschinenwesen, Technische Universität
Dresden, 06.02.2006.

b) contributed talks

R. Abrudan, W. Kuch, M. Bernien, J. Miguel, C. Tieg, and J. Kirschner
Probing electronic and magnetic properties of epitaxial Fe/CoO bilayers by X-ray absorption
spectroscopy
21st General Conference of the EPS Condensed Matter Division and Frühjahrstagung des
Arbeitskreises Festkörperphysik der DPG, Dresden, 26.–31.03.2006.

W. Kuch, R. M. Abrudan, M. Bernien, J. Miguel, C. Tieg, and J. Kirschner
Probing electronic and magnetic properties of epitaxial Fe/CoO/Ag(001) by x-ray absorption
spectroscopy
European Conference on Surface Science (ECOSS 24), Paris, France, 04.–08.09.2006.

W. Kuch, K. Fukumoto, J. Vogel, J. Camarero, F. Romanens, S. Pizzini, M. Bonfim, and J.
Kirschner
Time, layer, and spatially resolved magnetic domain imaging of layered magnetic structures
by x-ray magnetic circular dichroism photoelectron emission microscopy

Deutsche Tagung für Forschung mit Synchrotronstrahlung, Neutronen und Ionenstrahlen an Großgeräten 2006 (SNI2006), Hamburg, 04.–06.10.2006.

K. Lenz, E. Kosubek, K. Baberschke, and W. Kuch
Oscillatory behavior of the linewidth with respect to the spacer thickness in the ferromagnetic resonance of trilayers
378th International Wilhelm and Else Heraeus Seminar “Spin Torque in Magnetic Nanostructures”, Bad Honnef, 22.–26.10.2006.

M. A. Niño, J. Camarero, N. Mikuszeit, J. J. de Miguel, R. Miranda, L. Gómez, J. Ferrón, R. M. Abrudan, K. Fukumoto, W. Kuch, S. G. Wang, C. Tieg, and J. Kirschner
Interplay of structure and magnetism in surfactant-assisted grown metastable $\text{Fe}_x\text{Cu}_{1-x}$ alloy films
European Conference on Surface Science (ECOSS 24), Paris, France, 04.–08.09.2006.

C. Tieg, R. Abrudan, M. Bernien, W. Kuch, and J. Kirschner
Magnetic domains and spin structure in single-crystalline NiMn/Co bilayers on Cu(001)
21st General Conference of the EPS Condensed Matter Division and Frühjahrstagung des Arbeitskreises Festkörperphysik der DPG, Dresden, 26.–31.03.2006.

J. Vogel, W. Kuch, K. Fukumoto, F. Romanens, J. Camarero, R. Hertel, M. Bonfim, S. Pizzini, F. Petroff, A. Fontaine, and J. Kirschner
Layer-resolved magnetization dynamics in magnetic tunnel junction-like trilayers studied by XMCD-PEEM
International Conference on Magnetism (ICM 2006), Kyoto, Japan, 20.–25.08.2006.

H. Wende
Importance of enhanced spin fluctuations in magnetic nanostructures
364. WE Heraeus-Seminar “Nanoscale Magnets—Top down meets Bottom up”, Bad Honnef, 04.–06.01.2006.

c) posters

R. M. Abrudan, W. Kuch, M. Bernien, J. Miguel, C. Tieg, and J. Kirschner
Probing electronic and magnetic properties of epitaxial iron/cobalt oxide bilayers by X-ray absorption spectroscopy
III. Joint European Magnetic Symposia (JEMS'06), San Sebastian, Spain, 26.–30.06.2006.

R. M. Abrudan, M. Bernien, C. Tieg, J. Miguel, W. Kuch, and J. Kirschner
Probing electronic and magnetic properties of epitaxial Fe/CoO bilayers by x-ray absorption spectroscopy
Workshop on Properties of ultrathin magnetic films, Bialowieza, Poland, 07.–09.09.2006.

J. Camarero, J. Miguel, J. Vogel, F. Garcia, F. Romanens, S. Pizzini, N. B. Brookes, J. Sort, B. Dieny, and J. B. Goedkoop
Magnetization reversal, asymmetry, and role of uncompensated spins in perpendicular exchange coupled systems
III. Joint European Magnetic Symposia (JEMS'06), San Sebastian, Spain, 26.–30.06.2006.

K. Fukumoto, W. Kuch, J. Vogel, J. Camarero, S. Pizzini, F. Romanens, M. Bonfim, A.

Fontaine, and J. Kirschner

Dynamics of magnetic domain wall motion after nucleation: Dependence on the wall energy
The 5th International Conference on LEEM/PEEM, Himeji, Japan, 15.–19.10.2006.

W. Kuch, F. Offi, L. I. Chelaru, J. Wang, K. Fukumoto, M. Kotsugi, J. Kirschner, and J. Kunes

Magnetic domain imaging study of epitaxial FeMn/Co bilayers using circular and linear magnetic dichroism

European Conference on Surface Science (ECOSS 24), Paris, France, 04.–08.09.2006.

W. Kuch, F. Offi, L. I. Chelaru, J. Wang, K. Fukumoto, M. Kotsugi, and J. Kirschner
Layer-resolved magnetic domain imaging of antiferromagnetic/ferromagnetic layered systems by x-ray magnetic dichroism photoelectron emission microscopy

Deutsche Tagung für Forschung mit Synchrotronstrahlung, Neutronen und Ionenstrahlen an Großgeräten 2006 (SNI2006), Hamburg, 04.–06.10.2006.

J. Miguel, J. Sanchez-Barriga, D. Bayer, B. Heitkamp, M. Piantek, H. Dürr, W. Kuch, M. Aeschlimann

Time- and layer-resolved magnetization dynamics in magnetic multilayered systems
25th BESSY Users' Meeting, Berlin, 07.–08.12.2006.

J. Minar, S. Chadov, S. Bornemann, H. Ebert, C. Sorg, H. Wende, K. Baberschke, M. Martins, W. Wurth, and N. Brookes

Calculation of spectroscopic properties of solids using the relativistic KKR-method
Deutsche Tagung für Forschung mit Synchrotronstrahlung, Neutronen und Ionenstrahlen an Großgeräten 2006 (SNI2006), Hamburg, 04.–06.10.2006.

M. A. Niño, J. Camarero, N. Mikuszeit, J. J. de Miguel, R. Miranda, R. Abrudan, K. Fukumoto, S. Wang, and W. Kuch

Correlation between structure and magnetic properties of bimetallic FeCu thin film alloys
III. Joint European Magnetic Symposia (JEMS'06), San Sebastian, Spain, 26.–30.06.2006.

C. Tieg, R. M. Abrudan, M. Bernien, S. G. Wang, W. Kuch, and J. Kirschner
Growth, structure, and magnetism of single-crystalline NiMn films and NiMn/Co bilayers on Cu(001)

International Symposium "Physics in low dimensions: Structure meets magnetism", Bochum, 05.–07.04.2006.

C. Tieg, R. M. Abrudan, M. Bernien, W. Kuch, and J. Kirschner
Magnetic domains and spin structure in single-crystalline NiMn/cobalt bilayers on Cu(001)
III. Joint European Magnetic Symposia (JEMS'06), San Sebastian, Spain, 26.–30.06.2006.

C. Tieg, R. M. Abrudan, M. Bernien, S. G. Wang, W. Kuch, and J. Kirschner
Magnetic domains and spin structure in single-crystalline NiMn/Co bilayers on Cu(001)
25th BESSY Users' Meeting, Berlin, 07.–08.12.2006.

J. Vogel, W. Kuch, K. Fukumoto, F. Romanens, J. Camarero, R. Hertel, M. Bonfim, S. Pizzini, F. Petroff, A. Fontaine, and J. Kirschner

Layer-resolved magnetization dynamics in magnetic tunnel junctions studied by XMCD-PEEM

III. Joint European Magnetic Symposia (JEMS'06), San Sebastian, Spain, 26.–30.06.2006.

H. Wende, M. Bernien, J. Luo, C. Sorg, N. Ponpandian, J. Kurde, J. Miguel, M. Piantek, X. Xu, Ph. Eckhold, W. Kuch, K. Baberschke, P. M. Panchmatia, B. Sanyal, P. M. Oppeneer, and O. Eriksson

Substrate induced magnetic ordering and switching of paramagnetic porphyrin monolayers
25th BESSY Users' Meeting, Berlin, 07.–08.12.2006.

d) presentations for the public

W. Kuch

Die Zukunft der magnetischen Datenspeicherung

Lange Nacht der Wissenschaften, Berlin, 2 public talks at Fachbereich Physik der Freien Universität Berlin, 13.05.2006.

W. Kuch

Magnetismus: Vom Kompass zum iPod

Sommeruniversität, Freie Universität Berlin, talk, 14.08.2006.

W. Kuch

Magnetismus: Vom Kompass zum iPod

Schülervorträge des Fachbereichs Physik, Freie Universität Berlin, talk, 27.09.2006.

Degrees:

Sebastian Zander

Einfluss einer FM-Schicht auf die Ordnungstemperatur von einkristallinen antiferromagnetischen FeMn-Filmen

Diploma degree, Freie Universität Berlin, April 2006.

Julia Kurde

EXAFS- und MEXAFS-Untersuchungen an *3d*- und *4f*-Ferromagneten

Diploma degree, Freie Universität Berlin, August 2006.