

Dr. Ilie-Elian RADU

Helmholtz-Zentrum Berlin für Materialien und Energie GmbH
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EDUCATION

- 05/2006 **Ph.D.** in the group of Prof. Dr. Martin Wolf at the Free University Berlin, Germany
- 09/2001 **M.Sc.**, Physics, West University of Timisoara, Romania and Free University Berlin, Germany
- 07/1999 **B.Sc.**, Physics, West University of Timisoara, Romania

PROFESSIONAL APPOINTMENTS

- 2012 – present Group Leader 'Ultrafast Magnetism on Elemental Time and Length Scales', Helmholtz-Zentrum Berlin – BESSY II, Berlin, Germany
- 2008-2012 Postdoctoral Research Associate, Prof. Dr. Theo Rasing, Radboud University Nijmegen, Netherlands
- 2006-2008 Postdoctoral Research Associate, Prof. Dr. Christian Back, Regensburg University, Germany

PUBLICATIONS:

1. *Coherent Optical Phonons and Parametrically Coupled Magnons Induced by Femtosecond Laser Excitation of the Gd(0001) Surface* A. Melnikov, **I. Radu**, U. Bovensiepen, O. Krupin, K. Starke, E. Matthias and M. Wolf; *Phys. Rev. Lett.* **91**, 227403 (2003)
2. *Picosecond Magnetization Dynamics of the Gd(0001) Surface* - A. Melnikov, U. Bovensiepen, **I. Radu**, O. Krupin, K. Starke, E. Matthias and M. Wolf; *J. Magn. Magn. Mat.* **272-276**, 1001 (2004)
3. *Coherent Surface and Bulk Vibrations Induced by the Femtosecond Laser Excitation of the Gd(0001) Surface State* – U. Bovensiepen, A. Melnikov, **I. Radu**, O. Krupin, K. Starke, M. Wolf and E. Matthias; *Phys. Rev. B* **69**, 235417 (2004)
4. *Spectral Dependence of the Time-Resolved Coherent and Incoherent Second Harmonic Response of Ferromagnetic Gd(0001)* – A. Melnikov, **I. Radu**, U. Bovensiepen, K. Starke, M. Wolf and E. Matthias; *J. Opt. Soc. Am. B* **22**, 204 (2005)

5. *Femtosecond Electron and Spin Dynamics in Gd(0001) Studied by Time-Resolved Photoemission and Magneto-Optics* – M. Lisowski, P. Loukakos, A. Melnikov, **I. Radu**, L. Ungureanu, M. Wolf and U. Bovensiepen; *Phys. Rev. Lett.* **95**, 137402 (2005)
6. *Antiferromagnetic-ferromagnetic phase transition in FeRh probed by x-ray magnetic circular dichroism* – C. Stamm, J.U. Thiele, T. Kachel, **I. Radu**, P. Ramm, M. Kosuth, J. Minar, H. Ebert, H.A. Dürr, W. Eberhardt and C.H. Back; *Phys. Rev. B* **77**, 184401 (2008)
7. *Ultrafast Dynamics at Lanthanides surfaces – microscopic interaction of charge, lattice and spin subsystems* – A. Melnikov, **I. Radu**, A. Povolotskiy, T. Wehling, A. Lichtenstein and U. Bovensiepen, *J. Phys. D: Appl. Phys* **41**, 164004 (2008)
8. *Laser-induced Magnetization Dynamics of Lanthanide-doped Permalloy Thin Films* - **I. Radu**, M. Kiessling, G. Woltersdorf, A. Melnikov, U. Bovensiepen, J.U. Thiele and C.H. Back; *Phys. Rev. Lett.* **101**, 117201 (2009)
9. *Laser-induced Generation and Quenching of Magnetization on FeRh Studied with Time-resolved X-ray Magnetic Circular Dichroism* – **I. Radu***, C. Stamm, N. Pontius, T. Kachel, P. Ramm, J.U. Thiele, H.A. Dürr and C.H. Back; *Phys. Rev. B.* **81**, 104415 (2010)
10. *Crystallographically amorphous ferrimagnetic alloys: Comparing a localized atomistic spin model with experiments*, T. Ostler, R. Evans, R. Chantrell, U. Atxitia, O. Chubykalo-Fesenko, **I. Radu***, R. Abrudan, F. Radu, A. Tsukamoto, A. Itoh, A. Kirilyuk, Th. Rasing and A. Kimel, *Phys. Rev. B.* **84**, 024407 (2011)
11. *Transient ferromagnetic-like state mediating ultrafast reversal of antiferromagnetically coupled spins* – **I. Radu***, K. Vahaplar, C. Stamm, T. Kachel, N. Pontius, H. Dürr, T. Osler, R. Evans, R. Chantrell, A. Tsukamoto, A. Itoh, A. Kirilyuk, Th. Rasing and A.V. Kimel; *Nature* **472**, 205-208 (2011)
12. *Ultrafast Magnetism as Seen by X-rays*, - **I. Radu***, K. Vahaplar, C. Stamm, T. Kachel, N. Pontius, F. Radu, R. Abrudan, H. Dürr, T. Osler, R. Evans, R. Chantrell, A. Tsukamoto, A. Itoh, A. Kirilyuk, Th. Rasing and A.V. Kimel; *Proc. SPIE* **8260**, 82601M (2012)
13. *Perpendicular Exchange-bias in Ferrimagnetic Spin Valves* – F. Radu, R. Abrudan, **I. Radu**, D. Schmitz and H. Zabel; *Nature Communications* **3**, 715 (2012)

14. *Nanoscale Spin Reversal by Non-local Angular Momentum Transfer Following Ultrafast Laser Excitation in Ferrimagnetic GdFeCo* – C. Graves, A. Reid, T. Wang, B. Wu, S. de Jong, K. Vahaplar, **I. Radu**, D. Bernstein, M. Messerschmidt, L. Müller, R. Coffee, M. Bionta, S. Epp, R. Hartmann, N. Kimmel, G. Hauser, A. Hartmann, P. Holl, H. Gorke, J. Mentink, A. Tsukamoto, A. Fognini, J. Turner, W. Schlotter, D. Rolles, H. Soltau, L. Strüder, Y. Acremann, A. Kimel, A. Kirilyuk, Th. Rasing, J. Stöhr, A. Scherz, and H. Dürr; *Nature Materials* **12**, 293-298 (2013)

15. *Coupling of Spin and Vibrational Degrees of Freedom of Adsorbates at Metal Surfaces Probed by Vibrational Sum-frequency Generation* - H. Öström, M. Krenz, **I. Radu**, U. Bovensiepen, M. Wolf and C. Frischkorn; *Appl. Phys. Lett.* **103**, 132403 (2013)

16. *Terahertz spin current pulses controlled by magnetic heterostructures* – T. Kampfrath, M. Battiato, P. Maldonado, G. Eilers, J. Nötzold, S. Mährlein, V. Zbarsky, F. Freimuth, Y. Mokrousov, S. Blügel, M. Wolf, **I. Radu**, P.M. Oppeneer and M. Münzenberg; *Nature Nanotechnology* **8**, 256-260 (2013)

17. *Ultrafast Thermally-induced Magnetic Switching in Synthetic Ferrimagnets* – R. Evans, T. Ostler, R. Chantrell, **I. Radu** and Th. Rasing; *Appl. Phys. Lett.* **104**, 082410 (2014)

18. *FemtoSpeX: a versatile optical pump–soft X-ray probe facility with 100 fs X-ray pulses of variable* – K. Holldack, J. Bahrtdt, A. Balzer, U. Bovensiepen, M. Brzhezinskaya, A. Erko, A. Eschenlohr, A. Firsov, R. Follath, W. Frentrup, L. Le Guyader, T. Kachel, P. Kuske, R. Mitzner, R. Müller, N. Pontius, T. Quast, **I. Radu**, J. S. Schmidt, C. Schüßler-Langeheine, M. Sperling, C. Stamm, C. Trabant, A. Föhlisch; *Journal of Synchrotron Radiation* (2014), DOI: 10.1107/S1600577514012247

19. *Influence of the Magnetization Compensation Point on the All-Optical Magnetization Switching* – L. Le Guyader, **I. Radu**, A. Eschenlohr, S. El Moussaoui, M. Buzzi, I. Razdolski, R. Medapalli, M. Savoini, Ch. Stamm, R. Mitzner, K. Holldack, T. Kachel, A. Tsukamoto, A. Itoh, A. Kirilyuk, Th. Rasing, F. Nolting, A.V. Kimel; *Ultrafast Magnetism I*, Springer Proceeding in Physics **159**, 30-31 (2015)

20. *Engineering Ultrafast Magnetism* – **I. Radu**, A. Eschenlohr, Ch. Stamm, F. Radu, R. Abrudan, K. Vahaplar, T. Kachel, N. Pontius, R. Mitzner, K. Holldack, A. Föhlisch, R.F.L. Evans, T.A. Ostler, J. Mentink, R.W. Chantrell, A. Tsukamoto, A. Itoh, A. Kirilyuk, A.V. Kimel, Th. Rasing; *Ultrafast Magnetism I*, Springer Proceeding in Physics **159**, 297-299 (2015)

21. *Laser-driven switching dynamics in phase change materials investigated by time-resolved x-ray absorption spectroscopy* - J. E. Boschker, R.-N. Wang, V.

Bragaglia, A. Giussani, R. Calarco, L. Le Guyader, M. Beye, **I. Radu**, K. Holldack, P. Fons, and A.V. Kolobov; (submitted)

22. *Ultrafast and Distinct Spin Dynamics in Magnetic Alloys: The Role of Magnetic Moment and Exchange Interaction* – **I. Radu***, C. Stamm, A. Eschenlohr, K. Vahaplar, T.Kachel, N. Pontius, R. Mitzner, K. Holldack, A. Föhlich, F. Radu, R. Evans, T. Ostler, J. Mentink, R. W. Chantrell, A. Tsukamoto, A. Itoh, A. Kirilyuk, A. Kimel and Th. Rasing; (submitted)

Invited Talks (selected):

‘An X-ray View on Ultrafast Magnetism’ **Foundation for Fundamental Research on Matter (FOM) Conference, Spring Meeting** - Veldhoven, Netherlands (January 2011)

‘An X-ray View on Ultrafast Magnetization Switching of Ferrimagnetic GdFeCo’ **International Magnetism and Optics Research (MORIS) Conference** - Nijmegen, Netherlands (June 2011)

‘An X-ray View on Ultrafast Magnetization Switching of Ferrimagnetic GdFeCo’ **International Workshop on Novel Trends in Optics and Magnetism of Nanostructures** - Augustow, Poland (July 2011)

‘Ultrafast Magnetism As Seen by X-rays’, **Moscow International Symposium on Magnetism** – Moscow, Russia (August 2011)

‘Ultrafast Magnetism As Seen by X-rays’ **International Workshop X-ray View of Ultrafast Dynamics of Solids** - BESSY Berlin, Germany (November 2011)

‘Ultrafast Magnetism As Seen by X-rays’ **SPIE Photonics Conference** – San Francisco, USA (January 2012)

‘Ultrafast Magnetism As Seen by X-rays’, **Gordon Research Conference on Ultrafast Phenomena in Cooperative Systems** – Galveston, USA (February 2012)

‘Ultrafast Magnetism of Multi-components Ferrimagnets and Ferromagnets on the Timescale of the Exchange Interaction’ **APS March Meeting** – Boston, USA (March 2012)

‘Exploring Ultrafast Magnetism with X-rays and THz Excitations’ **International Conference ‘Spin Waves’** St. Petersburg, Russia (June 2013)

‘Engineering Ultrafast Magnetism’, **International Workshop ‘Ordering and Dynamics in Magnetic nanostructures’**, Schloß Maurach, Germany (September 2014)