

DR ANDREAS WÜSTEFELD

Geophysicist
– Seismology and Rock Physics –

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Born on September 23, 1976 in Northeim, Germany
Nationality: German

SUMMARY

In my current PostDoc position at Bristol University (UK) in collaboration Rio Tinto, I analyse fracture characteristics in a large microseismic dataset, I am developing a fully automated Shear-Wave Splitting workflow. By applying this technique to microseismicity in reservoirs I can strongly benefit from the knowledge in stress and strain acquired during my Master Thesis. My current research focus is on the detection and characterisation of fractures, which have significant implications for material properties, rock stability and bulk permeability.

During my PhD Thesis in Montpellier (France) I developed a Shear Wave Splitting environment in Matlab, which is freely available at <http://www.gm.univ-montp2.fr/splitting/>. The associated splitting database is popular amongst the researchers from all over the world.

POSITIONS

- 09/2007 – currently PostDoctoral Research Assistant, *University of Bristol, UK*
“Microseismicity and anisotropy in reservoirs and mines” - Implementing an automated shear wave splitting code in a professional reservoir production environment and benchmarking.
- 01/2005 – 09/2007 PhD in seismology, *Université Montpellier II, France*
- 01/2004 – 11/2004 Postgraduate Research Assistant, *University of Karlsruhe, Germany*
- Matlab interface for heat conduction measurements
- FE model of stress transfers caused by windmills
- 05/1998 – 12/2003 Student Research Assistant, *University of Karlsruhe, Germany*
- Paleoseismology in Upper Rhinegraben (2003)
- Visualization of 3D mantle flow in Matlab (2002 – 2003)
- 3D-FD model of Rhinegraben and Israel in GoCad (1998 – 2001)

EDUCATION

- 01/2005 – 08/2007 PhD in Geophysics at *Université Montpellier II, France*
PhD Thesis: “Methods and applications of Shear Wave Splitting” ([PDF](#), 12MB)
Supervisor: Prof. Götz Bokelmann
- 10/1997 – 11/2003 Diplom (Master’s Degree) in Geophysics at *Universität Karlsruhe, Germany*
Master’s Thesis: “3D elastic Finite Element modelling of static stress changes due to strong intermediate depth earthquakes in the Vrancea region, Romania” ([PDF](#), 6MB)
Supervisors: Prof. Karl Fuchs, Prof. Friedemann Wenzel
Graduate courses: Geophysics, Geodynamics and Tectonics, Rock Mechanics, Experimental Physics

PUBLICATIONS

- Al-Harrasi, O.; Al-Anboori, A.; Wüstefeld, A.; Kendall, J.M. (Accepted) Seismic anisotropy in a hydrocarbon field estimated from microseismic data, *Geophys. Prosp.*
- Wüstefeld, A.; Al-Harrasi, O.; Verdon, J.P.; Wookey, J., Kendall, J.M. (2010) Strategies for a fully automated passive microseismic anisotropy analysis, *Geophys. Prosp.* DOI:10.1111/j.1365-2478.2010.00891.x
- Verdon, J.P.; Kendall, J.M.; Wüstefeld, A. (2009) Imaging fractures and sedimentary fabrics using shear wave splitting measurements made on passive seismic data, *GJI*, 179, 1245-1254
- Wüstefeld, A.; Bokelmann, G.H.R. & Barruol, G. (2009) "Correlation of global seismic anisotropy from SKS splitting and surface waves", *PEPI*, 176, 198-212
- Wüstefeld, A.; Bokelmann, G.H.R. & Barruol, G. (2009) "Evidence for ancient lithospheric deformation in the East European Craton based on mantle, seismic anisotropy and crustal magnetism", *Tectonophysics*, 481, 16-28
- Bokelmann, G.H.R., Wüstefeld, A. (2009) "Comparing crustal and mantle fabric from the North American craton using magnetism and seismic anisotropy", *EPSL.*, 277(3-4), 355-364
- Wüstefeld, A.; Bokelmann, G.; Zaroli, C. & Barruol, G. (2008) „SplitLab: A shear-wave splitting environment in Matlab" *Computers & Geosciences*, 34, 515-528
- Wüstefeld, A. & Bokelmann, G. (2007) "Null Detection in Shear-Wave Splitting Measurements" *Bull. Seism. Soc. Am.*, 97, 1204-1211

I furthermore presented several posters and talks at international research conferences

TEACHING EXPERIENCE

- | | |
|-------------|--|
| 2006 – 2009 | supervision of PhD, Master and undergraduate student projects |
| 2003 – 2004 | Instruction of new diploma students in numerical modelling software |
| 2001 – 2004 | Supervision of students' practical course "Material parameters of cores" |
| 2001 – 2002 | Supervision of students' field practical course "Magnetism" |

FIELD EXPERIENCE

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|-------------------|---|
| 07/2001 – 10/2001 | RV Polarstern cruise 17/2 - Deployment of ice-borne seismic stations, magnetic survey flights, gravimetry, parasound, airgun and streamer handling for reflection seismic surveys, data preprocessing, extraction of sediment cores on board Icebreaker <i>Polarstern</i> during AMORE2001 expedition to Arctic Gakkel-Ridge, Nansen-Basin and North Pole (<i>Alfred Wegener Institut, Germany</i>) |
| 04/2000 – 05/2000 | RV Meteor cruise 47/2 - Deployment of OBS/OBH stations, airgun handling and data pre-processing on board research vessel <i>METEOR</i> during GERSHWIN expedition, Mid-Atlantic-Ridge, 5°S (<i>Geomar Kiel, Germany</i>) |
| 07/1998 – 08/1999 | CDRoM: Continental Dynamics- Rocky Mountains Project - Deployment of seismic stations in the central Rocky Mountains, CO, USA (<i>Univ. Karlsruhe</i>) |
| 09/1998 | TransAlp - Deployment of seismic stations in Austrian and Italian Alps (<i>Univ. Munich</i>) |
| 07/1998 | Mining Geophysics - Mining geophysics in the teaching mine of the University of Freiberg, Germany |
| 02/1998 – 04/1998 | SHIPS98: Seismic Hazards Investigations in Puget Sound - Deployment of seismic stations during SHIPS98 experiment in Seattle, WA, USA, region (<i>USGS</i>) |

LANGUAGES

German:	Oral: Excellent	Written: Excellent (native language)
English:	Oral: Excellent	Written: Excellent
French:	Oral: Excellent	Written: Good

ADDITIONAL INFORMATION

Software:	Windows, Linux, Macintosh, Cygwin, MS-DOS, Amiga ABAQUS, Adobe, Corel, Didger, GMT, GoCad, HyperMesh, InSite, Latex, Microsoft Office, MS Visual Studio, OpenDX, SAC, Surfer
Programming:	Matlab, FORTRAN, C++, HTML, PHP, javascript, Basic, Assembler
Drivers license:	up to 7.5t and full motorbike
SeismicCoffeeBreak:	At Bristol University, I initiated and organise a bi-weekly group meeting to present and discuss current issues
Webmaster:	I initiated and maintain the following online projects SplitLab Shear Wave Splitting in Matlab SplitBase A global Shear Wave Splitting database GeoCygwin Using Cygwin in Geophysics I furthermore help the developers to implement SAC under Cygwin for the PC

PERSONAL INTERESTS

Bass-Guitar, Mountain bike, Photography, Snowboard, Volleyball

REFERENCES

- Prof. Dr. Mike Kendall, Director of Research, Earth Sciences Department, Univ. of Bristol
<http://www.gly.bris.ac.uk/people/jmk.html>
Phone: +44 117 331 5126; Email: gljmk@bristol.ac.uk
- Prof. Dr. Götz Bokelmann, Head of Seismology, Univ. Montpellier II,
<http://www.dstu.univ-montp2.fr/PERSO/bokelmann/>
Phone: +33 467 143 349; Email: Goetz.Bokelmann@gm.univ-montp2.fr
- Dr. Brigit Mueller, Co-Head of World-Stress-Map project, University of Karlsruhe
<http://www-gpi.physik.uni-karlsruhe.de/pub/stressgroup/>
Phone: +49 721 608 4621; Email: birgit.mueller@kit.edu