

CURRICULUM VITAE TARJE NISSEN-MEYER

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Education

- 2007** **Ph.D. Geophysics**, *Department of Geosciences, Princeton University, Princeton, NJ*
Thesis: "Full-wave seismic sensitivity in a spherical Earth"
Supervisors: F. A. Dahlen, Guust Nolet
- 2004** **M. A. Geosciences**, *Department of Geosciences, Princeton University*
"The axisymmetric spectral-element method for elastic wave propagation"
Courses in field geology, mathematics, seismology, geodynamics, geophysics
- 2001** **Diplom Geophysics (M.Sc.)**, *University of Munich, Germany*
Thesis: "Numerical simulation of wave propagation through subduction zones"
Supervisor: H. Igel; examinations in geophysics, geology, physics, crystallography
- 1999** **Visiting student**, *McGill University, Montreal, Canada*
Courses in geodynamics, geomagnetism, seismology, programming
- 1997** **Vordiplom Geophysics (B.Sc.)**, *University of Munich*
Examinations in experimental & theoretical physics, mathematics, mineralogy
- 1994** **Abitur** (High school graduation), *Christoph-Probst-Gymnasium, Germany*
Specialization in physics, fine arts, English, geography

Employment

- 2010 - ...** **Oberassistent**, *Institute of Geophysics, ETH Zurich, Zurich, Switzerland*
- 2008 - 2010** **Postdoctoral Research Associate**, *Dept. of Geosciences, Princeton University*
- 2007 - 2008** **Postdoctoral Scholar in Geophysics**, *California Institute of Technology, Pasadena, CA*
- 2002 – 2007** **Research and teaching assistant**, *Dept. of Geosciences, Princeton University*
Voluntary responsibilities: Linux cluster administration
- 2004** **Summer intern**, *Shell Exploration and Production Company, New Orleans*
3-D pressure and velocity modeling in complex structures
- 2001 – 2002** **Research assistant**, *Institute of Geophysics, University of Munich*
3-D spherical & 2-D axisymmetric finite differences, anisotropic wave propagation
- 1998 – 2001** **Student research assistant**, *Institute of Geophysics, University of Munich*
• system administration (webpages, network, seismological databases)
• Transalp 99: Seismic reflection data acquisition, Belluno, Italy
- 1998, 1999** **Visiting researcher**, *Chemistry Dept., Concordia University, Montreal, Canada*
Maintenance and operation of Argon-, Titan-Sapphire-, dye-lasers: visible & infrared emission/absorption spectra, decay times, energy transfer on Rare Earth ion doped crystals
- 1996 – 2000** **High school/college tutor in Mathematics, Sciences**, *Studienkreis Giesing, Munich*
- 1994 – 1995** **Civil Service** (mandatory), *Benedictian Monastery Schäftlarn, Germany*
• monastery: Social services, kitchen assistant, porter
• boarding school: tutoring, monitoring, group coordination

Teaching

- 2006** **Grader**, *Earthquakes, Volcanoes and Other Hazards*
Department of Geosciences, Princeton University
- 2004 & 2005** **Preceptor**, *A Guided Tour of the Solar System*
Departments of Geosciences & Astrophysics, Princeton University
- 2004** **Lab Instructor**, *Earthquakes, Volcanoes and Other Hazards*
Department of Geosciences, Princeton University

Honours

- 2006 – 2007** **Harold W. Dodds Honorific Fellowship**, Graduate School, *Princeton University*
- 2006** **Arnold Guyot Teaching Award**, Dept. of Geosciences, *Princeton University*
- 2005** **Outstanding Student Paper Award** (Seismology), *American Geophysical Union*
- 2002** **Dusenbury Prize** for high academic standing, *Princeton University*
- 1999** **Scholarship “Hochschule International”** to study abroad, *University of Munich*
- 1997** **Dean’s List** upon “Vordiplom”, Institute of Geophysics, *University of Munich*
- 2001-2006** **Competitive external funding: travel & conference grants** by
- *NSF*: Gordon research meetings & SEDI workshop (Prague, Czech Republic)
 - *European Union*: EURESCO Conference “The Deep Earth” (Espinho, Portugal)
 - *Centro Internazionale per la Ricerca Matematica*: International Conference on “High Order Non-Oscillatory Methods for Wave Propagation” (Trento, Italy)
 - *German Geophysical Society*: DGG Meeting (Frankfurt, Germany)

Professional services

- 2009** **Discussion leader**, *Educational activities in seismology, CIG workshop*
“Opportunities and Challenges in Computational Geophysics”
- 2008** **Outstanding student paper evaluation**, *AGU (Study of the Earth’s Deep Interior)*
- 2008** **Proposal reviewer**, *National Science Foundation*
U.S. Department of Energy
- 2007 - 2009** **Journal reviewer**, *Geophysical Journal International*
Computer Modeling in Engineering and Sciences
- 2006** **Session convener**, *American Geophysical Union*

Computer skills

- Systems** Administrative level: Linux clusters, Mac OS X, MS Windows NT/2000/XP
- Development** Fortran 90, Matlab, MPI, C, Java, shell scripts, Perl, Python, JavaScript
- Software** E.g. Matlab, LaTeX, Maple, Gocad, paraview, CUBIT, SAC, GMT, gnuplot, xmgrace, xfig

Languages

- Fluently** German (native), English
- Moderate** French, Norwegian

Research presentations (* = invited lecture)

- June 2009** * Institute of Geophysics, **ETH Zurich**, Zurich, Switzerland
- May 2009** * Workshop “Tomography with Wavelets”, *Villefranche-sur-Mer, France*
- Feb. 2009** * Department of Physics, **University of Colorado**, Boulder, CO
- Dec. 2008** * Fall Meeting, **American Geophysical Union**, San Francisco, CA
- Aug. 2008** * 33rd **International Geological Congress**, Int. Union of Geol. Sciences, Oslo, Norway
- Apr. 2008** * Annual Meeting, **Seismological Society of America**, Santa Fe, NM
- Dec. 2007** Fall Meeting, **American Geophysical Union**, San Francisco, CA
- Nov. 2007** * Computational Seismology Seminar, **University of Munich**, Munich, Germany
- Oct. 2007** * Workshop in Computational Seismology, **CIG/SPICE/IRIS**, Jackson, NH
- Sep. 2007** * **F. A. Dahlen Memorial Symposium**, Princeton University, Princeton, NJ
- Dec. 2006** * Fall Meeting, **American Geophysical Union**, San Francisco, CA
- Oct. 2006** * Department of Geophysics, **Stanford University**, Palo Alto, CA
- Jul. 2006** * Arctic Region Supercomputing Center, **University of Alaska**, Fairbanks, AK
- Jan. 2006** * Upstream Research, **ExxonMobil**, Houston, TX
- Oct. 2005** * Exploration and Production Company, **Shell International**, Houston, TX
- Apr. 2005** * "High Order Non-Oscillatory Methods for Wave Propagation", **CIRM Trento**, Italy

Publications (peer-reviewed)

- Nissen-Meyer, T.**, Sigloch, K., 2009. *Diffraction-wave multiple-frequency tomography: Sensitivity, data selection, resolution, parameter optimization*. In preparation.
- Nissen-Meyer, T.**, Fournier, A., 2009. *Seismic sensitivity in spherical earth models*. To be submitted.
- Zhu, H., Luo, Y., **Nissen-Meyer, T.**, Morency, C., Tromp, J., 2009. *Elastic Imaging and Time-Lapse Migration Based Upon Adjoint Methods*. Geophysics, accepted.
- Ampuero, J.-P., **Nissen-Meyer, T.**, 2009. *High-order conservative time schemes in spectral-element methods for seismic wave propagation*. To be submitted to Geophysical Journal International.
- Luo, Y., Zhu, H., **Nissen-Meyer, T.**, Morency, C., Tromp, J., 2009. *Seismic modeling and imaging based upon spectral-element and adjoint methods*. The Leading Edge, May 2009, 260-265.
- Nissen-Meyer, T.**, Fournier, A., Dahlen, F. A., 2008. *A 2-D spectral-element method for computing spherical-earth seismograms—II. Waves in solid-fluid media*. Geophys. J. Int., **174**(3), 873-888.
- Nissen-Meyer, T.**, Fournier, A., Dahlen, F. A., 2007. *A 2-D spectral-element method for computing spherical-earth seismograms—I. Moment-tensor source*. Geophys. J. Int., **168**(3), 1067-1093.
- Nissen-Meyer, T.**, Dahlen, F. A., Fournier, A., 2007. *Spherical-earth Fréchet sensitivity kernels*. Geophys. J. Int., **168**(3), 1051-1066, 2007.
- Igel, H., **Nissen-Meyer, T.**, Jahnke, G., 2002. *Wave propagation in 3-D spherical sections: Effects of subduction zones*. Phys. Earth Planet. Inter., **132**, 219-234.
- Igel, H., Brietzke, G., Ewald, M., Fohrmann, M., Jahnke, G., **Nissen-Meyer, T.**, Ripperger, J., Strasser, M., Treml, M., Wang, G., 2002. *3-D seismic wave propagation on a global and regional scale: Earthquakes, fault zones, volcanoes*. "High Performance Computing in Science and Engineering", p. 353, Springer Verlag Berlin.

Selected abstracts & conference proceedings

Luo, Y., **Nissen-Meyer, T.**, Tape, C., Zhu, H., Morency, C., Tromp, J., 2009. Mapping the earth's interior. National Science Foundation Open House for Congress members, Washington, DC.

Nissen-Meyer, T., Luo, Y., Morency, C., Tromp, J., 2008. Spectral-element simulations of wave propagation in complex exploration-industry models: Mesh generation and forward simulations, Eos Trans. AGU, 89(53), Fall Meet. Suppl., S11C-1777.

Luo, Y., **Nissen-Meyer, T.**, Morency, C., Tromp, J., 2008. Spectral-element simulations of wave propagation in complex exploration-industry models: Imaging and adjoint tomography, Eos Trans. AGU, 89(53), Fall Meet. Suppl., S11C-1778.

Ampuero, J.-P., **Nissen-Meyer, T.**, 2006. Dispersion analysis and high-order symplectic time schemes in spectral-element based seismic wave propagation, Eos Trans. AGU, 87(52), Fall Meet. Suppl., S41B-1336.

Nissen-Meyer, T., Fournier, A., Dahlen, F. A., 2006. *Spectral-element based seismograms as a basis for diffracted-phase tomography*, SEDI meeting Prague, Czech Republic.

Nissen-Meyer, T., Fournier, A., Dahlen, F. A., 2005. *3-D global wavefields computed using 2-D spectral elements: A basis for exact sensitivity kernels*, Eos Trans. AGU, 86(52), Fall Meet. Suppl., S13A-0187.

Nissen-Meyer, T., Fournier, A., Dahlen, F. A., 2004. *Towards computing full 3D seismic sensitivity: The axisymmetric spectral-element method*, Eos Trans. AGU, 85(47), Fall Meet. Suppl., S31B-1039.

Treml, M., Goes, G., Jahnke, G., **Nissen-Meyer, T.**, Igel, H., 2003. *Synthetic seismic wave propagation through thermal mantle plumes*, EGS General Assembly, April 2003, Nice, France.

Nissen-Meyer, T., Igel, H., 2002. *3D modeling of anisotropic wave propagation in spherical geometry*. Presented at 10th International Workshop on Seismic Anisotropy, Tutzing, Germany.

Nissen-Meyer, T., Igel, H., 2001. *3D wave effects of sources inside subduction zones*. Eos Trans. AGU, 82 (47), Fall Meet. Suppl., Abstract T41C-0903, 2001.

Strasser, M., **Nissen-Meyer, T.**, Igel, H., 2001. *Numerical 3D modelling of wave effects from upper mantle structures*. Geophysical Research Abstracts, Vol. 3, 2001, SE1.02 (SE004), Nice, France.

Nissen-Meyer, T., Strasser, M., Igel, H., Bunge, P., 2000. *Towards modelling 3-D wave effects of plumes and subduction zones*. Eos Trans. AGU, 81 (48), Fall Meet. Suppl., Abstract S62A-02, 2000.

Extracurricular activities

Princeton University

- Linux cluster administration and benchmarking
- vice-president, Council of International Graduate Students
- faculty/graduate student liaison for geosciences faculty job search
- elected departmental representative in the Graduate Student Government
- organization of International Graduate Student Orientation, invited panelist
- organization of solid-earth science seminar series

University of Munich

- elected student representative for the Faculty of Geosciences
- student representative in the faculty's B.Sc./M.Sc. commission

Diversions

Active sports: soccer, hockey, downhill/cross-country skiing

Active music: guitar, mandolin

Miscellaneous: mountaineering, photography, art history