



# University Children's Hospital Zurich

## Research Fellow



## Lars Michels, PhD Neurobiologist

### Address

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## Research *i*nterests

### Topics:

Short-term working memory  
Form- and motion perception  
Brain maturation  
Epilepsy, tinnitus and pain

### Methods:

- Functional Magnetic Resonance Imaging (fMRI), functional connectivity
- Electroencephalography (EEG)
- EEG-fMRI
- Voxel-based-morphometry (VBM)
- Diffusion Tensor Imaging (DTI)
- Arterial spin labeling (ASL)
- Spectroscopy (GABA)

## Current projects

- Thalamocortical interactions in brain state regulation during normal development and in epilepsy (collaborators R. Lüchinger, D. Jeanmonod, P. Klaver, E. Martin, D. Brandeis).
- EEG in pain and tinnitus patients during rest and during working memory (D. Jeanmonod, A. Morel, M. Moazami).
- GABA-EEG and GABA-ASL-EEG recordings during resting states and cognition (R. L. O'Gorman, R. Lüchinger, P. Klaver, R. Edden, D. C. Alsop, A. Shankaranarayanan, E. Martin, D. Brandeis).

Peer reviewed articles ([reprint request](#))

- U. Maurer, S. Brem, M. Liechti, R. Lüchinger, K. Bucher, L. Michels, D. Brandeis (2010). Individual differences in the frontal midline theta working memory effect: modulation by accuracy and individually determined peaks. *Submitted Journal of Neuroscience*.
- L. Michels, M. Moazami-Goudarzi, D. Jeanmonod (2010). EEG dynamics after selective regulatory central lateral thalamotomy against chronic neuropathic pain. *Submitted BMC Neurosci*.
- L. Michels, E. Martin, D. Brandeis, R. Lüchinger, P. Klaver, A. Shankaranarayanan, D.C. Alsop, R.L. O’Gorman (2010). Two physiological life partners: Coupling between resting cerebral perfusion and absolute EEG power. *Submitted Neuroimage*.
- L. Michels, K. Bucher, S. Brem, P. Halder, R. Lüchinger, M. Liechti, E. Martin, D. Jeanmonod, J. Kröll, D. Brandeis (2010). Does Greater Low Frequency EEG Activity in Normal Immaturity and in Children with Epilepsy Arise in the Same Neuronal Network? *Brain Topography*, *accepted*.
- L. Michels, K. Bucher, R. Lüchinger, P. Klaver, E. Martin, D. Jeanmonod, D. Brandeis (2010). Simultaneous EEG-fMRI during a working memory task: Modulations in low and high frequency bands. *PLoS One*, *5(4):e10298*
- M. Moazami-Goudarzi, L. Michels, N. Weisz, D. Jeanmonod (2010). Temporo-insular enhancement of EEG low and high frequencies in patients with chronic tinnitus. *BMC Neurosci*. *2010 Mar 24;11:40*.
- U. Mehnert, L. Michels, M.Z. Zempleni, B. Schurch, S. Kollias (2010). The supraspinal neural correlate of bladder cold sensation-An fMRI study. *Hum Brain Mapp*. *2010 May 24. [Epub ahead of print]*.
- M.Z. Zempleni, L. Michels, U. Mehnert, S. Kollias, B. Schurch (2010). Cortical substrate of urinary bladder in spinal cord injury and the effect of pudendal stimulation. *Neuroimage*. *2010 Feb 15;49(4):2983-94. Epub 2009 Oct 28*.
- L. Michels, R. Kleiser, M.H. de Lussanet, R.J. Seitz, M. Lappe (2009). Brain activity for peripheral biological motion in the posterior superior temporal gyrus and the fusiform gyrus: Dependence on visual hemifield. *Neuroimage*. *2009 Mar 1;45(1):151-9. Epub 2008 Nov 19*.
- M. Moazami-Goudarzi, J. Sarnthein, L. Michels, R. Moukhtieva, D. Jeanmonod. (2008). Enhanced frontal low and high frequency power and synchronization in the resting EEG of parkinsonian patients. *Neuroimage*. *2008 Jul 1; 41(3):985-97*.
- U. Mehnert, S. Boy, J. Svensson, L. Michels, A. Reitz, V. Candia, R. Kleiser, S. Kollias, B. Schurch (2008). Brain activation in response to bladder filling and simultaneous stimulation of the dorsal clitoral nerve--an fMRI study in healthy women. *Neuroimage*. *2008 Jul 1;41(3):682-9*.

- L. Michels, M. Moazami-Goudarzi, D. Jeanmonod, J. Sarnthein (2008). EEG alpha distinguishes between cuneal and precuneal activation in working memory. *Neuroimage*. 2008 Apr 15;40(3):1296-310.
- M.H. de Lussanet, L. Fadiga, L. Michels, R.J. Seitz, R. Kleiser, M. Lappe (2008). Interaction of visual hemifield and body view in biological motion perception. *Eur J Neurosci*. 2008 Jan;27(2):514-22.
- L. Michels, M. Lappe, L.M. Vaina (2005). Visual areas involved in the perception of human movement from dynamic form analysis. *Neuroreport*. 2005 Jul 13; 16(10):1037-41.
- L. Michels, M. Lappe (2004). Contrast dependency of saccadic compression and suppression. *Vision Res*. 2004; 44(20):2327-36.

## Book chapters

- M. Lappe, L. Michels, H. Awater. Visual factors in perisaccadic compression of space (chapter 12). In: Problems of space and time in perception and action (Cambridge University Press). Romi Nijhawan & Beena Khurana (Editor)

## Curr*i*culum Vitae

### Academic Training

- 10/97 – 06/02 M.Sci. in Biology, University of Bochum, Germany

### Postgraduate Qualifications

- 05/06 Postdoc in the Department of Neuroradiology (Prof. Kollias), University Hospital, Zurich.
- Since 06/06 Postdoc in the Department of Functional Neurosurgery (Prof. Jeanmonod), Zurich, Switzerland.
- Since 01/09 Postdoc in the Department of Functional Neurosurgery (Prof. Jeanmonod) and MR-Center University Children's Hospital (Prof. E. Martin), Zurich, Switzerland.

### Appointments

- 08/00 6-week internship at the Max-Planck Institute (MPI) of brain research, Frankfurt. First experiences with fMRI and optical imaging.
- 03/02 Diploma in Biology (comparable to M.Sc.) from the Ruhr-University Bochum (Germany) in the lab of Prof. K.-P. Hoffmann. Thesis on 'The perception of visual stimuli during saccadic eye movements'
- 06/02 - 04/06 PhD student at the Department of psychology in the lab of Prof. M. Lappe (Westfälische-Wilhelms University, Münster, Germany)
- 09/02 - 12/02 Guest Researcher at the Brain and Vision Research Laboratory in the lab of Prof. L. M. Vaina (Boston University, USA).

- 09/03 fMRI workshop: Functional magnetic resonance tomography: Stimulation and control systems, Heinrich-Heine University, Düsseldorf (Germany).
- 04/06 Dissertation.

## Collaborators

Dr. Marcus Kaiser, School of Computing Science, Newcastle University, United Kingdom

Prof. Markus Lappe and Dr. Marc de Lussanet, Westfälische Wilhelms-Universität, Institut für Psychologie, Münster, Germany

Dr. Simone Grimm, Freie Universitaet Berlin, Cluster of Excellence Languages of Emotion and Dahlem Institute for Neuroscience of Emotion, Berlin, Germany

## Links

<a href="#">University Children's Hospital Zurich</a>	<ul style="list-style-type: none"> <li>▶ <a href="#">MR-Center</a></li> <li>▶ <a href="#">Child Development Center</a></li> </ul>
<a href="#">University of Zurich</a>	▶ <a href="#">Department of Psychology</a>
<a href="#">ETH Zurich</a>	▶ <a href="#">Department of Biology</a>
<a href="#">Neuroscience Center Zurich (ZNZ)</a>	