

22nd Ocular Motor Meeting, Zürich-München
January 27-28, 2012
Department of Neurology, University Hospital Zürich



Program

Friday, January 27

12:30: Registration, snack, loading/testing of Power Point presentations, hanging posters.

Monakow Hörsaal, Klinik für Neurologie USZ

13:55 **Welcome**

- 14:00 **Konrad P. Weber**, Zürich
Single motor unit recordings of ocular vestibular evoked myogenic potentials in human extraocular muscles
- 14:20 **Lukas Brostek**, München
Eye velocity gain fields in MSTd encode non-linear combinations of visual and eye-movement related variables
- 14:40 **Chien-Cheng Chen**, Zürich
Study of optokinetic after-nystagmus in Zebrafish larvae

15:00 **Coffee break**

- 15:30 **Christian Ruff**, Zürich
Cortico-cortical interactions in the human eye movement circuitry investigated with TMS-fMRI
- 15:50 **Thomas Haslwanter**, Linz
Application of eye and body movements in rehabilitation
- 16:10 **Poster blitz** (2 minutes each; up to 3 Power Point slides)
Lorenz Assländer, Freiburg: Visual velocity information effects on human balancing of support surface tilts
Giovanni Bertolini, Zürich: Mechanism of gaze evoked and rebound nystagmus
Bernhard Blum, München: Eye movements and visual acuity in phorias
Chien-Cheng Chen, Zürich: Nystagmus generated by positive visual feedback system in healthy humans
Paolo Colagiorgio, Pavia: Generalized saccadic adaptation
Luigi Cuturi, München: Systematic biases in heading perception
Stefan Glasauer, München: Beyond sensory input-iterative Bayesian estimation in human visual path integration
Martin Gorges, Ulm: Quantitative analysis of oculomotor performance in patients with subcortical vascular encephalopathy (SVE)

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16:30 **Coffee break**

- 17:00 **Marino Menozzi**, Zürich
Measurement and possible role of microfluctuations of accommodation
- 17:20 **Marco Piccirelli**, Zürich
MRI of the oculomotor System
- 17:40 **Poster Blitz** (2 minutes each; up to 3 Power Point slides)
Julia Groß, München: Comparison of clinical methods to measure vestibular perception
Georg Hettich, Freiburg: Comparing human artificial vestibular sensor with engineering analogue
Paul MacNeilage, Munich: Otolith afferent population properties and human linear motion discrimination compared
Alessandro Nesti, Tübingen: Differential thresholds for vertical motion
Murat Saglam, München: Optimal control of head-free gaze shifts
Iskra Stefanova, München: Age-related variability of BOLD signal in healthy subjects during optokinetic nystagmus
Florian Soyka, Tübingen: Reaction times for self-motion detection
Alex Tarnutzer, Zürich: Egocentric and allocentric alignment tasks rely on otolith input
Ellie Khojasteh, Zürich: A theory on the mechanism of gaze effects during spontaneous nystagmus (Alexander's Law)

18:00 Coffee, laboratory visits

20:00 **Personalrestaurant USZ: Gemeinsames Abendessen**

Saturday January 28

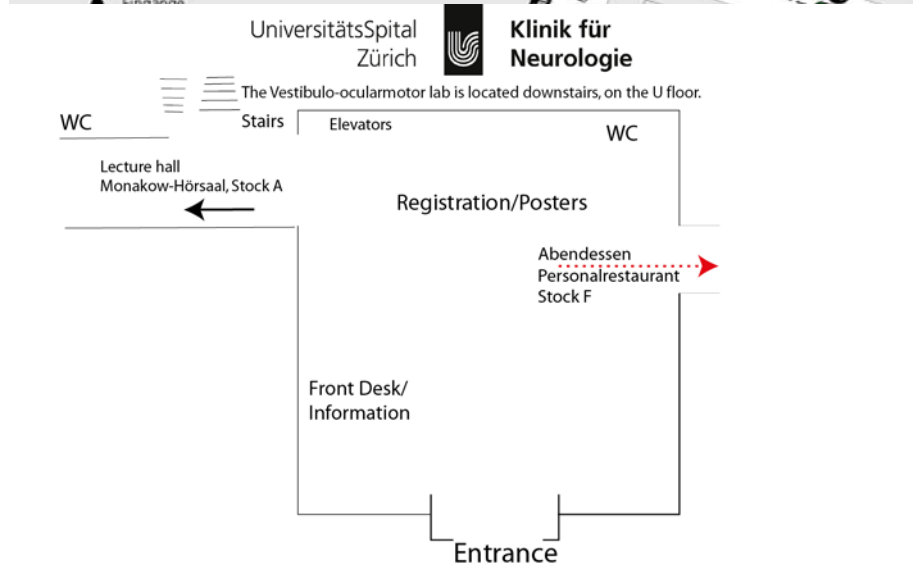
Monakow Hörsaal, Klinik für Neurologie USZ

8:30: Coffee, loading/testing of Power Point presentations

- 9:00 **Stefan Hegemann**, Zürich
Alexander's law revisited, yet again
- 9:20 **Jean Laurens**, St Louis
Neural representation of head motion in the vestibulo-cerebellum of the macaque
- 9:40 **Nadine Lehnen**, München
Gaze stabilization in humans with chronic complete loss of vestibular function
- 10:00 **Thomas Mergner**, Freiburg
Using biped robots to simulate human stance control

10:20 **Coffee break**

- 10:40 **Stefano Ramat**, Pavia
Functional testing of the VOR
- 11:00 **Roman Schniepp**, München
4-Aminopyridine and its influence on gait and posture in patients with cerebellar deficits
- 11:20 **Andreas Sprenger**, Lübeck
Binocular coordination of eye movements during REM sleep
- 11:40 **Alex Tarnutzer**, Zürich
Modulation of internal estimates of gravity during and after prolonged roll-tilts



Talks

Single motor unit recordings of ocular vestibular evoked myogenic potentials in human extraocular muscles

Konrad P. Weber*, Ophthalmology and Neurology Department, University Hospital Zurich
 Sally M. Rosengren*, Neurology Department, University Hospital Zurich
 Rike Michels, Ophthalmology Department, University Hospital Zurich
 Veit Sturm, Ophthalmology Department, University Hospital Zurich
 Dominik Straumann, Neurology Department, University Hospital Zurich
 Klara Landau, Ophthalmology Department, University Hospital Zurich
 *These co-first authors contributed equally

Eye velocity gain fields in MSTd encode non-linear combinations of visual and eye-movement related variables

Lukas Brostek, BCCN and Clinical Neurosciences, Ludwig-Maximilians-Universität München
 Michael J. Mustari, Washington National Primate Research Center, University of Washington, Seattle
 Ulrich Büttner, Clinical Neurosciences and IFB-LMU, LMU, München
 Stefan Glasauer, BCCN and Clinical Neurosciences and IFB-LMU, LMU, München

Study of optokinetic after nystagmus in Zebrafish larvae

Chien-Cheng Chen, department of neurology, USZ
 Christopher J Bockisch, Department of Neurology, Ophthalmology, and Otorhinolaryngology, USZ
 Itsaso Olasagasti, Department of Neurology, USZ
 Konrad P. Weber, Ophthalmology and Neurology Department, University Hospital Zurich
 Stephan C.F. Neuhauss, Institute of Molecular Life Sciences, UZH
 Dominik Straumann, Department of Neurology, USZ
 Ying-Yu Melody Huang, Department of Neurology, USZ

Application of eye and body movements in rehabilitation

Thomas Haslwanter, Univ. of Applied Sciences Upper Austria (FH OÖe), Dept. of Medical Technology
 Karin Eibenberger, FH OÖe, Dept. of Medical Technology & Johns Hopkins School of Med.
 Michael Ring, FH OÖe, Dept. of Medical Technology

Measurement and possible role of microfluctuations of accommodation

Marino Menozzi, ETH Zürich, Technology and Innovation Management, CH - 8092 Zürich
 Pier Paolo Monticone, ETH Zürich, Technology and Innovation Management, CH - 8092 Zürich

MRI of the oculomotor System

Marco Piccirelli, SNS Lab & Institute for Biomedical Eng., University and ETH Zurich

Cortico-cortical interactions in the human eye movement circuitry investigated with TMS-fMRI

Christian Ruff, Laboratory for Social and Neural Systems Research (SNS), Department of Economics,
 Jon Driver, UCL Institute of Cognitive Neuroscience, London, UK.

Alexander's law revisited, yet again

Stefan Hegemann, ORL, University Hospital Zurich

Neural representation of head motion in the vestibulo-cerebellum of the macaque

Jean Laurens, Washington University School of Medicine, St Louis, Missouri
 Dora Angelaki, Baylor College of Medicine, Houston, Texas

Gaze stabilization in humans with chronic complete loss of vestibular function

Nadine Lehnen, Neurology and IFB, Munich University
 Murat Saglam, IFB, Munich University
 Stefan Glasauer, Clinical Neurosciences, BCCN and IFB, Munich University

Using biped robots to simulate human stance control

Thomas Mergner, Neurologie Freiburg
 Georg Hettich, Neurologie Freiburg
 Luminous Fennell, Neurologie Freiburg

Functional testing of the VOR

Stefano Ramat, Università di Pavia
 Silvia Colnaghi, Università di Pavia
 Paolo Colagiorgio, Università di Pavia
 Maurizio Versino, Università di Pavia

4-Aminopyridine and its influence on gait and posture in patients with cerebellar deficits

Roman Schniepp, Department of Neurology, University of Munich
 Klaus Jahn, Department of Neurology, University of Munich

Binocular coordination of eye movements during REM sleep

Andreas Sprenger, University Luebeck, Dept. of Neurology
 Sabine Scheffelmeier, University Luebeck, Dept. of Neurology
 Peter Trillenber, University Luebeck, Dept. of Neurology
 Holger Rambold, Kreiskrankenhaus Alt-Oetting, Dept. of Neurology
 Wolfgang Heide, AKH Celle, Dept. of Neurology
 Christoph Helmchen, University Luebeck, Dept. of Neurology

Modulation of internal estimates of gravity during and after prolonged roll-tilts

Tarnutzer AA (1), Bertolini, G. (1), Bockisch CJ (1,2,3), Straumann D (1), and Marti S (1)
 1. Department of Neurology, Zurich University Hospital, Switzerland
 2. Department of Otorhinolaryngology, Zurich University Hospital, Switzerland
 3. Department of Ophthalmology, Zurich University Hospital, Switzerland

Posters**1. Visual velocity information effects on human balancing of support surface tilts**

Lorenz Assländer, Neurozentrum Freiburg
 Georg Hettich, Neurozentrum Freiburg
 Thomas Mergner, Neurozentrum Freiburg

2. Mechanism of gaze evoked and rebound nystagmus

Giovanni Bertolini, Clinical Vestibulo-Oculomotor Laboratory - Zurich University Hospital
 Sarah Marti, Clinical Vestibulo-Oculomotor Laboratory - Zurich University Hospital
 Tarnutzer Alexander, Clinical Vestibulo-Oculomotor Laboratory - Zurich University Hospital
 Dominik Straumann, Clinical Vestibulo-Oculomotor Laboratory - Zurich University Hospital

3. Eye movements and visual acuity in phorias

Bernhard Blum, IFB-LMU, Klinikum der Ludwig-Maximilians-Universität München
 Daniel Kirchhoff, Neurologische Klinik, Klinikum der Ludwig-Maximilians-Universität München
 Thomas Eggert, Neurologische Klinik, Klinikum der Ludwig-Maximilians-Universität München
 Oliver Ehart, Augenklinik der Ludwig-Maximilians-Universität, Klinikum der Universität München
 Andreas Straube, Neurologische Klinik, Klinikum der Ludwig-Maximilians-Universität München

4. Nystagmus generated by positive visual feedback system in healthy humans

Chien-Cheng Chen, Departments of Neurology, USZ
 Christopher J Bockisch, Departments of Neurology, Ophthalmology, and Otorhinolaryngology, USZ
 Christian Grimm, Departments of Ophthalmology, USZ
 Stephan C.F. Neuhaus, Institute of Molecular Life Sciences, UZH
 Dominik Straumann, Departments of Neurology, USZ
 Ying-Yu Melody Huang, Departments of Neurology, USZ

5. Generalized saccadic adaptation

Paolo Colagiorgio, Università di Pavia
 Stefano Ramat, Università di Pavia

6. Systematic biases in heading perception

Luigi Cuturi, IFB, University Hospital of Munich
 Paul MacNeilage, IFB, University Hospital of Munich

7. Beyond sensory input-iterative Bayesian estimation in human visual path integration

Stefan Glasauer, Center for Sensorimotor Research, LMU Munich
 Frederike Petzschner, Bernstein Center for Computational Neuroscience, Munich

8. Quantitative analysis of oculomotor performance in patients with subcortical vascular encephalopathy (SVE)

Martin Gorges, University of Ulm, Department of Neurophysiology
 Hazem Issa, University of Ulm, Department of Neurology
 Reinhart Jürgens, University of Ulm, Department of Neurophysiology
 Wolfgang Becker, University of Ulm, Department of Neurophysiology
 Hans Peter Müller, University of Ulm, Department of Neurology
 J. Heimrath, D. Lulé, E.H. Pinkhardt, J. Kassubek, University of Ulm, Department of Neurology

9. Comparison of clinical methods to measure vestibular perception

Julia Groß, IFB, University Hospital of Munich
 Paul MacNeilage, IFB, University Hospital of Munich
 Barbara Schorr, NCP, Ludwig-Maximilians-University, Munich
 Stefan Glasauer, IFB, University Hospital of Munich
 Michael Strupp, IFB, Department of Neurology, University Hospital of Munich
 Thomas Brandt, IFB, Department of Neurology, University Hospital of Munich

10. Comparing human artificial vestibular sensor with engineering analogue

Georg Hettich, Neurozentrum Freiburg
 Thomas Mergner, Neurozentrum Freiburg
 Luminous Fennell, Neurozentrum Freiburg
 Ahmed Al-Jawad, Institut für Micro-und Informationstechnik Villingen-Schwenningen
 Lasse Klingbeil, Institut für Micro-und Informationstechnik Villingen-Schwenningen

11. Otolith afferent population properties and human linear motion discrimination compared

Paul MacNeilage, IFB, University Hospital of Munich
 Nicole Whippley, University of Bristol
 Dora Angelaki, Baylor College of Medicine

12. Differential thresholds for vertical motion

Alessandro Nesti, Max Planck Institute for Biological Cybernetics
 Michael Barnett-Cowan, Max Planck Institute for Biological Cybernetics
 Paul MacNeilage, Klinikum der Universität München
 Heinrich H. Bühlhoff, Max Planck Institute for Biological Cybernetics

13. Optimal control of head-free gaze shifts

Murat Saglam, Klinikum Grosshadern, Ludwig Maximilians University, Munich
 Nadine Lehnen, Klinikum Grosshadern, Ludwig Maximilians University, Munich
 Stefan Glasauer, Klinikum Grosshadern, Ludwig Maximilians University, Munich

14. Reaction times for self-motion detection

Florian Soyka, Max Planck Institute for Biological Cybernetics
 Paolo Robuffo Giordano, Max Planck Institute for Biological Cybernetics
 Michael Barnett-Cowan, Max Planck Institute for Biological Cybernetics
 Heinrich H. Bühlhoff, Max Planck Institute for Biological Cybernetics

15. Age-related variability of BOLD signal in healthy subjects during optokinetic nystagmus

Iskra Stefanova, Graduate School of Systemic Neurosciences LMU
 Thomas Stephan, Department of Neurology, University Hospital Grosshadern LMU Munich
 Thomas Dera, Department of Neurology, University Hospital Grosshadern LMU Munich
 Thomas Brandt, Department of Clinical Neuroscience, University Hospital Grosshadern LMU Munich
 Marianne Dieterich, Department of Neurology, University Hospital Grosshadern LMU Munich

16. Egocentric and allocentric alignment tasks rely on otolith input

Tarnutzer AA¹, Bockisch CJ^{1,2,3}, Straumann D¹
 1. Department of Neurology, Zurich University Hospital, Switzerland
 2. Department of Otorhinolaryngology, Zurich University Hospital, Switzerland
 3. Department of Ophthalmology, Zurich University Hospital, Switzerland

17. A theory on the mechanism of gaze effects during spontaneous nystagmus (Alexander's Law)

Ellie Khojasteh¹, Bockisch CJ^{1,2,3}, Hegemann H¹
 1. Department of Otorhinolaryngology, Zurich University Hospital, Switzerland
 2. Department of Neurology, Zurich University Hospital, Switzerland
 3. Department of Ophthalmology, Zurich University Hospital, Switzerland