

International Course and Conference

MIND AND BRAIN V: Physics and the Brain

September 17-23, 2006, Dubrovnik, Croatia

www.brain.hr

Directors: Selma Supek*, University of Zagreb (* contact director)
Hendrikus Duifhuis, University of Groningen
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PRELIMINARY PROGRAM SCHEDULE

August 18, 2006

SUNDAY, September 17, 2006

16:00 - 19:00 REGISTRATION

19:00 - 19:20 Opening remarks

19:20 - 20:00 Chris Wood: *OPENING LECTURE* – TBA

20:00 – 22:00 *WELCOME RECEPTION*

MONDAY, September 18, 2006

8:00 - 9:15 REGISTRATION

NIKOLA TESLA Symposium: *Electromagnetism and the Brain*

Symposium organizer: Selma Supek

9:15 - 9:30 Selma Supek: **Introduction**

9:30 - 10:30 David Cohen: **The changing physics of the MEG: From 1968 to 2006**

10:30 - 11:00 **BREAK**

11:00 - 12:00 John Clarke, E. Han, M. Hatridge, N. Kelso, M. Moessle, W. Myers, A. Pines, S.K. Lee, R. McDermott, M. Mueck, L. Schmidt, J. Simko, B. ten Haken, A. Trabesinger:

SQUID-detected magnetic resonance imaging in microtesla fields: A new clinical modality?

12:00 - 13:00 Peter A. Bandettini: **Fifteen years of functional MRI**

- 13:00 - 16:00** *Lunch*
- 16:00 - 17:00 Risto Ilmoniemi: **Electromagnetic stimulation of the brain: From physics and physiology to clinical applications**
- 17:00 - 17:30 **BREAK**
- 17:30 - 18:30 John van Opstal, P. Bremen, R. van der Willigen, J. Goossens: **How Nikola Tesla helped cracking the neural code of the midbrain**
- 18:30 - 19:00 Jurg von Ins: **Nikola Tesla: Vision, creativity and scientific progress**

TUESDAY, September 19, 2006

Session chair:.....

- 09:00 - 10:00 Seppo Ahlfors: **TBA**
- 10:00 - 10:30 **BREAK**

Symposium I: Electromagnetic studies of the brain

Symposium organizer: Leon Heller

- 10:30 - 11:10 Leon Heller, B. E. Barrows, J. S. George:
Modeling direct detection of the neuromagnetic field by magnetoencephalography and magnetic resonance imaging
- 11:10 - 11:50 Robert H. Kraus, Jr.: **Simultaneous imaging of neural activity and anatomy by magnetic resonant techniques at ultra-low field**
- 11:50 - 12:30 K. M. Rodgers, A. M. Benison, Daniel Barth: **Fast oscillations and two dimensional coincidence**
- 12:30 - 13:00 Discussion

13:00 - 16:00 *Lunch*

PLENARY SESSION

Session chair:

- 16:00 - 16:30 Hecimovic, H. *Epilepsy as a model for studying neural networks*
- 16:30 - 16:50 Grimm, S., Northoff, G., Beck, J., Schmidt, C., Boesiger, P., Hell, D., Boeker, H.:
Prefrontal dysfunction and neuropsychological deficits in severe major depression
- 16:50 - 17:10 Gaal, Zs. A., Csuha, R., Molnar, M.:
Age-related changes of resting EEG, auditory event-related potentials and CNV
- 17:10 - 17:30 Tolmacheva, E. A., van Juijtelaa, G.: *Does hippocampus control thalamo-cortical oscillations*
- 17:30 - 17:40 **BREAK**

17:40 - 19:30 **GUIDED CITY TOUR**

WEDNESDAY, September 20, 2006

Session chair:

- 09:00 - 10:00 Arno Villringer: **TBA**
- 10:00 - 10:30 **BREAK**
- 10:30 - 11:30 Arno Villringer: **TBA**
- 11:30 - 12:30 Discussion

12:30 - 14:00 *Lunch*

14:00 - **EXCURSION**

20:00 - **BANQUET DINNER**

THURSDAY, September 21, 2006

Session chair:

09:00 - 10:00 Valeria Csepe: **The music of language: Word stress and prosody processed by the human brain**
10:00 - 10:30 **BREAK**

Symposium II: Sensory biophysics

Symposium organizer: Hendrikus Duifhuis

10:30 - 10:35 Hendrikus Duifhuis: **Introduction**
10:35 - 11:20 Rob de Ruyter van Steveninck: **Adaptation in a blowfly motion sensitive neuron**
11:20 - 12:00 K. M. Rodgers, A. M. Benison, Daniel Barth: **Fast oscillations and two dimensional coincidence**
12:00 - 12:40 Hendrikus Duifhuis, L. Slabu, S. Tomaskovic, J. E. C. Wiersinga-Post: **Audio-visual interactions**
12:40 - 13:00 Discussion

13:00 - 16:00 Lunch

PLENARY SESSION

Session chair:

16:00 - 16:20 Susac, A., Ilmoniemi, R. J., Pihko, E., Nurminen, J., Supek, S.:
MEG study of an early face-object dissociation
16:20 - 16:40 Nurminen, J., Taulu, S., Okada, Y.:
Hardware requirements of the Signal Space Separation method
16:40 - 17:00 Rizzo, C. V., Duifhuis, H., Hoogduin, H.: ***Acoustic fMRI noise: Linear time invariant system model***
17:00 - 17:20 Slabu, L. M., Renken, R., Hoogduin, J. M., Wiersinga-Post, J. E. C., Duifhuis, H.:
The effect of slice orientations on auditory fMRI at the inferior culliculi level
17:20 - 17:30 **BREAK**
17:30 - 18:00 **POSTER guided tour**

- P-1. Dimitrovski, D., Pop-Jordanov, J., Pop-Jordanova, N., Solov'ev, E. A.: ***Quantum excitation of water molecules in neuron by EEG as an information transfer mechanism***
P-2. Gaal, Zs. A., Csuhaj, R., Molnar, M.:
Age-related changes of resting EEG, auditory event-related potentials and CNV
P-3. Grimm, S., Northoff, G., Beck, J., Schmidt, C., Boesiger, P., Hell, D., Boeker, H.:
Prefrontal dysfunction and neuropsychological deficits in severe major depression
P-4. Hecimovic, H. ***Epilepsy as a model for studying neural networks***
P-5. Jurasic M.-J. Josef-Golubic, S., Hecimovic, H., Bosnjak, J. Demarin, V.: ***Vascular aging in women***
P-6. Nurminen, J., Taulu, S., Okada, Y.: ***Hardware requirements of the Signal Space Separation method***
P-7. Pop-Jordanov, J., Pop-Jordanova, N.: ***A nongotropic quantum model of mental arousal***
P-8. Rizzo, C. V., Duifhuis, H., Hoogduin, H.: ***Acoustic fMRI noise: Linear time invariant system model***
P-9. Shakirzyanova A., Nikolsky E., Giniatullin R.:
Reactive oxygen species regulate quantal mediator release at the mouse neuromuscular junction
P-10. Slabu, L. M., Renken, R., Hoogduin, J. M., Wiersinga-Post, J. E. C., Duifhuis, H.:
The effect of slice orientations on auditory fMRI at the inferior culliculi level
P-11. Susac, A., Ilmoniemi, R. J., Pihko, E., Nurminen, J., Supek, S.:
MEG study of an early face-object dissociation
P-12. Tolmacheva, E. A., van Juijtelaaar, G.: ***Does hippocampus control thalamo-cortical oscillations***
P-13. Walter, M., Witzel, J., Wiebking, C., Schiltz, K., Tempelmann, C., Bogerts, B., Heinze, J. J., Northoff, G.:
Pedophilia is linked to reduced activation during expectancy and experience of visual erotic stimulation in the DLPFC and hypothalamus

18:00 - 19:00 **DISCUSSION CLUBS – TBA**

**19:00 - Best poster award
Cheese and wine party**

FRIDAY, September 22, 2006

Session chair:

- 09:00 - 10:00 Jens Haueisen, L. Leistritz, T. Suesse, G. Curio, H. Witte:
**Identifying mutual information transfer in the brain with differential-algebraic modeling:
Evidence for fast oscillatory coupling between cortical somatosensory areas 3B and 1**
- 10:00 - 10:30 **BREAK**

Symposium III: Physics, Computation, and the Brain

Symposium organizer: Chris Wood

10:30 - 13:00 **TBA**

13:00 - 16:00 *Lunch*

16:00 - 17:00 **DISCUSSION CLUBS – TBA**

17:00 - 17:30 **BREAK**

17:30 - 18:30 **DISCUSSION CLUBS – TBA**

SATURDAY, September 23, 2006

Session chair:

- 09:00 - 10:00 Peter Hagoort: **The Memory, Unification and Control (MUC) Model of Language**
- 10:00 - 10:30 **BREAK**
- 10:30 - 11:30 Risto Ilmoniemi: **Physics and the Brain**
- 11:30 - 12:00 Discussion
- 12:00 - 12:15 **Closing remarks**