

## International Course and Conference

# MIND AND BRAIN V: Physics and the Brain

September 17-22, 2006, Dubrovnik, Croatia

[www.brain.hr](http://www.brain.hr)

**Directors:** Selma Supek\*, University of Zagreb (\* contact director)  
Hendrikus Duifhuis, University of Groningen  
Leon Heller, Los Alamos National Laboratory  
Chris Wood, Santa Fe Institute

**Venue:** Dubrovnik President Hotel  
Iva Dulcica 39  
20000 Dubrovnik  
Croatia  
Tel.: +385-20-448 249  
Fax: +385-20-435 622  
E-mail: [sales.department@babinkuk.com](mailto:sales.department@babinkuk.com)  
Web: [www.babinkuk.com](http://www.babinkuk.com)

## Final PROGRAM SCHEDULE

September 10, 2006

### SUNDAY, September 17, 2006

**16:00 - 19:00 REGISTRATION**

**19:00 - 19:20 Opening remarks**

**19:20 - 20:00 Chris Wood: *OPENING LECTURE – Imaging the Human Brain: Progress and Prospects***

**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: David Cohen*

- 09:00 - 10:00    Seppo Ahlfors: **MEG and multimodal integration**
- 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*

- 16:00 - 17:00    **DISCUSSION CLUB** – *moderator: Peter Bandettini and Risto Ilmoniemi*  
– *topics: high and ultra- low field MRI, neurodynamics, brain connectivity,...*  
– *lecturers: R. Kraus, L. Heller, J. Clarke, D. Cohen, D. Barth, S. Ahlfors*

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

## **WEDNESDAY, September 20, 2006**

*Session chair: Daniel Barth*

- 09:00 - 10:00    Valeria Csepe: **The music of language: Word stress and prosody processed by the human brain**
- 10:00 - 10:30    **BREAK**
- 10:30 - 11:30    Risto Ilmoniemi: **Physics and the Brain**
- 11:30 - 12:00    Discussion

**12:00 -**         *Lunch*

14:00 -         **EXCURSION**

20:00 -         **BANQUET DINNER**

## **THURSDAY, September 21, 2006**

*Session chair: John van Opstal*

09:00 - 10:00 Rob de Ruyter van Steveninck:  
**Visual motion estimation and optimal sensory processing in the fly**  
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 John van Opstal, J. Goossens:  
**Dynamic ensemble coding of saccades in monkey superior culliculus**  
12:00 - 12:40 Hendrikus Duifhuis, L. Slabu, S. Tomaskovic, J. E. C. Wiersinga-Post: **Audio-visual interactions**  
12:40 - 13:30 Discussion

**13:30 - 16:00 Lunch**

*Session chair: Seppo Ahlfors*

16:00 - 16:30 Hecimovic, H. *Epilepsy as a model for studying neural networks*  
16:30 - 17:00 Discussion

17:00 - 17:15 **BREAK**

17:15 - 18:00 **POSTER guided tour**

*Session chair: Valeria Csepe*

- 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. Jurasic M.-J. Josef-Golubic, S., Hecimovic, H., Bosnjak, J. Demarin, V.: *Vascular aging in women*  
P-4. Nurminen, J., Taulu, S., Okada, Y.: *Hardware requirements of the Signal Space Separation method*  
P-5. Pop-Jordanov, J., Pop-Jordanova, N.: *A neogentropic quantum model of mental arousal*  
P-6. Rizzo, C. V., Duifhuis, H., Hoogduin, H.: *Acoustic fMRI noise: Linear time invariant system model*  
P-7. 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-8. Susac, A., Ilmoniemi, R. J., Pihko, E., Nurminen, J., Supek, S.:  
*MEG study of an early face-object dissociation*  
P-9. Tolmacheva, E. A., van Juijtelaar, G.: *Does hippocampus control thalamo-cortical oscillations*  
P-10. 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 CLUB** – moderator: **Rob de Ruyter van Steveninck and Chris Wood**  
– topics: *sensory perception, neuroimplants, ...*  
– lecturers: **H. Duifhuis, J. van Opstal, V. Csepe, S. Ahlfors, D. Barth**

*Cheese and wine party*

## **FRIDAY, September 22, 2006**

*Session chair: Stephan Mertens*

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 *Speakers: Chris Wood , Chris Eliasmith, Stephan Mertens*

**13:00 - 15:00** *Lunch*

15:00 - 16:30 **DISCUSSION CLUB** – *moderator: Chris Eliasmith and J. Haueisen*  
– *topics: neurocomputation, neurophylosophy,...*  
– *lecturers: C. Wood, S. Mertens, H. Duifhuis*

16:30 - 17:00 *Closing remarks*

**Discussion Clubs** could focus but are not limited to the topics indicated in the program schedule.

Participants are invited to suggest their topics of interest and schedule afternoon or evening D-clubs with lecturers and post their D-club announcements on the Mind and Brain V message board.