Convegno Internazionale

Mathematical aspects of brain functions. Compositionality and Synchronization

9 - 10 ottobre 2006

Comitato Ordinatore: Enrico ARBARELLO, Mina TEICHER, Alessandro TREVES.

Il Convegno è organizzato in collaborazione con l'*Emmy Noether Institute* (ENI), *MATHfSS European network* e *DIP project "Compositionality"*.

PROGRAMMA - INVITO

Lunedì 9 ottobre
9.00   Enrico ARBARELLO, Mina TEICHER: *Introduction to the meeting*
Sessione I – Biophysics of computation
9.10   Moshe ABELES: *Space and time scales for studying cortical mechanisms*
10.00   Toni GUILLAMON: *Mathematical problems arising in conductance estimation*
10.50   Intervallo
11.20   Markus DIESMANN: *Spike-timing dependent plasticity in balanced random networks*
12.10   Theo GEISEL: *Synchronization properties of complex networks - unstable attractors and other puzzles*
Sessione II – Synchronization in perception and memory
14.00   Edmund ROLLS: *Neuronal encoding and computation for vision, memory, and attention*
14.50   Misha TSODYKS: *Dynamics of memory associations in attractor neural networks*
15.40   Intervallo
16.20   Juergen JOST: *Information theory, non-linear dynamics, and neural networks*
17.10   Michael HERRMANN: *Information processing in the sensory-motor loop*

Martedì 10 ottobre
Sessione III – Compositionality and the generation of behaviour
9.00   Tamar FLASH: *Geometrical approaches to motion pro-duction and perception: compositionality, optimization and brain representation*
9.50   Emilio BIZZI: *Combining a small number of basic motor elements simplifies the production of movements*
10.40   Intervallo
11.20   Francesco BATTAGLIA: *Neural ensemble activity in the rat prefrontal cortex during a*

decision making task

12.10   Alessandro TREVES: *Latching dynamics for the composition of recursive sequence*s

Sessione IV – Control and prediction

14.00   Angela SIRIGU: *Neural basis of movement prediction*

14.50   Tim SHALLICE: *The fractionation of supervisory prefrontal functions: can artificial intelligence offer a guide?*

15.40   Intervallo

16.20   Jacques MEHLER: *What we learn from artificial grammars about the first steps of language acquisition*

17.10   Mina TEICHER: *Concluding remarks*

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