**LABORATORY OF COMPUTATIONAL NEUROSCIENCE (LCN)**

**Prof. Wulfram Gerstner**
EPFL – IC & SV– LCN
SG –AAB119  (Bâtiment SG-AAB)
Station 15
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# *Thursday, January 22nd, 2015*
# *13h30, Room AAC 120*

## *Computational Neuroscience Seminar*

# Riccardo ZECCHINA
## Theoretical Physics Department of Applied Science and Technology, Politecnico di Torino

## Efficient learning and generalization in networks with "material" synapses

We will discuss how the recent advances in statistical physics of random constraint satisfaction problems can contribute to learning problems in neural systems.

Specifically we shall describe the main conceptual challenges related to learning with discrete synapses (down to the binary case) and how some of these challenges can be solved efficiently by message-passing algorithms.

On-going applications to "deep" networks, hardware in situ learning, efficient Bayesian predictions and to input supervised learning in attractor networks will be mentioned.