

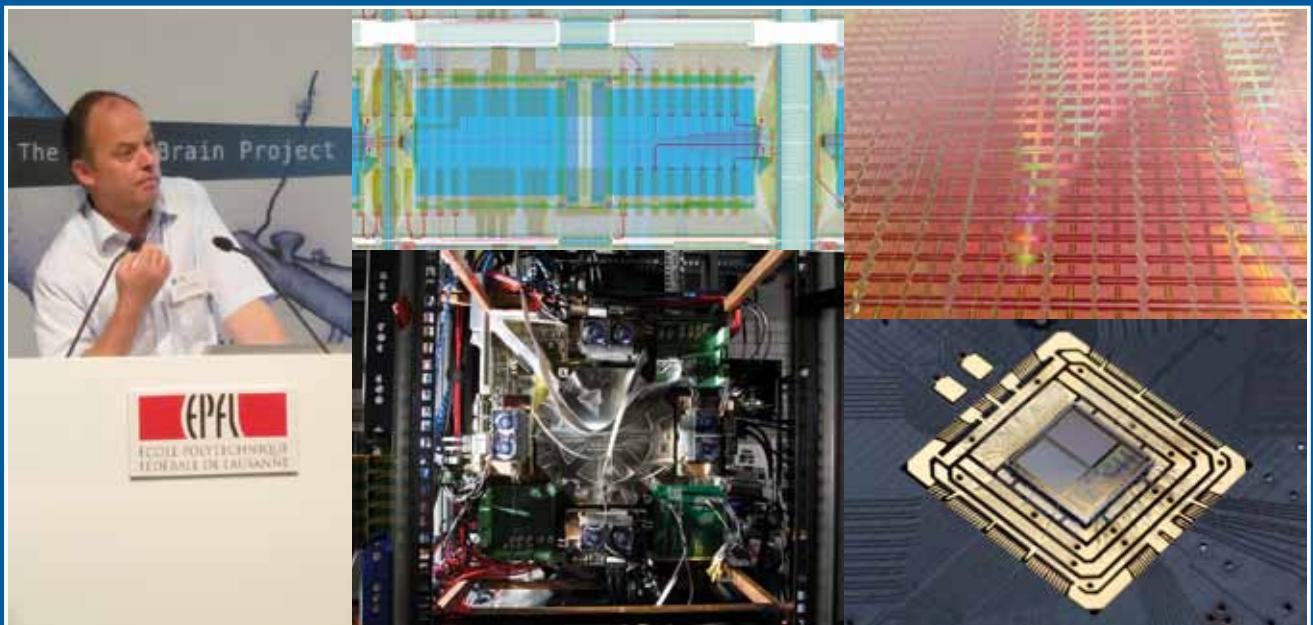
# ExtreMe Matter Institute EMMI

## EMMI Featured Talk

# Physical Models of the Brain Technologies, Theories and Synthesis

Karlheinz Meier, Heidelberg University & Human Brain Project

November 18, 2013; 17:15h  
GSI Darmstadt KBW Lecture Hall



The brain is a universe of 100 billion cells interacting through a constantly changing network of 1000 trillion synaptic connections. It runs on a power budget of 20 Watts and carries a rather complete model of our physical world. Understanding fundamental principles of the brain is among the key challenges for science. Traditional simulation approaches are mostly hindered by a huge energy gap of 14 orders of magnitude between supercomputer simulations and biological reality.

In the lecture we will discuss an approach to build a physical model of the brain as a tool for experimental tests of theories that attempt to describe the storage and processing of information in the brain. The lecture will focus on recent results but also give a short introduction to the planned work in the recently approved EU Human Brain Project.