

Abstract

Dr. Karlheinz Meier - EPFL Life Science Seminars Series - July 3, 2015

Viewed with the eyes of a physicist some aspects the brain can be described by a classical multi-particle approach. Major differences between living and physical matter arise from the facts that constituents of the brain are active information processing units and that their interactions are changing with time. Also, the brain is not an isolated system but develops as a result of interaction with the environment. These facts limit the applicability of analytical methods and even simulations on traditional high performance computers are hindered by energy and timing constraints. The lecture will introduce the idea of implementing synthetic neural circuits as physical models which offer several orders of magnitude advantages over the simulation approach in terms of energy and time.