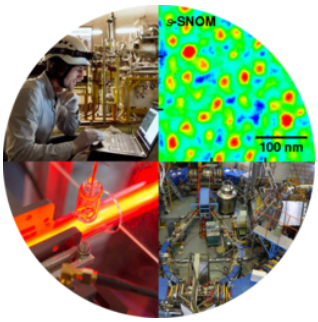

Münchner Physik-Kolloquium

Winter 2017/18

Festkolloquium für Professor Leo van Hemmen

Monday, 23 October 2017, **16:15 h**
Hörsaal 2, Physik-Department der TUM, Garching

What are the learning rules of the brain?

Prof. Dr. Wulfram Gerstner, *École polytechnique fédérale de Lausanne (EPFL), Switzerland*

Whenever we learn something, the connections of the neural network inside our brains change. Can we mathematically describe the rules that govern these changes? And, for a given rule, what are the consequences of such changes? In this talk, I review some classic, and some more recent approaches towards answering this question.

Spin tunneling and quantum Einstein-de Haas effect

Prof. Dr. Eugene M. Chudnovsky, *The City University of New York, USA*

It has been a little over 100 years since the discovery of Einstein – de Haas effect (1915) and a little over 30 years since a seminal paper of van Hemmen and Süto (1986) on quantum spin tunneling. Contemporary interest to these effects is fueled by the prospect to use spins as qubits. Experiment has progressed from studying the field-induced rotation of a macroscopic body to the readout, via spin-rotation coupling, of spin states of a single atomic nucleus in a molecule drafted on a carbon nanotube (Wernsdorfer's group – 2016). This and other experiments, as well as theory of spin tunneling and quantum Einstein – de Haas effect, will be reviewed.