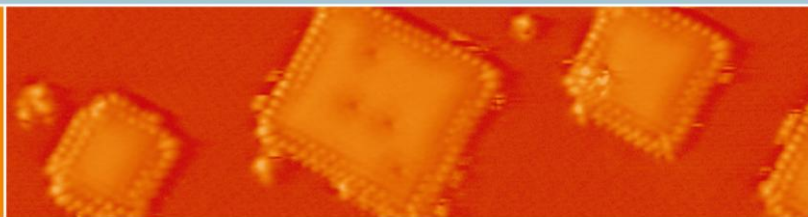




MARTIN-LUTHER-UNIVERSITÄT
HALLE-WITTENBERG



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Time: 17:15 h
Room: Conference Hall

Thursday,
October 29th, 2015

IAMO (Leibniz-Institut
für Agrarentwicklung in
Transformations-
ökonomien)
Theodor-Lieser-Str. 2
06120 Halle

Coffee will be served from 17:00.

Prof. Martin B. Plenio

Ulm University

Diamond Quantum Devices for Sensing and Simulation

The advancement of sensing technologies makes ever new natural phenomena accessible to experimental examination. The next sensing frontier is set by the detection of individual electron and nuclear spins in ambient conditions that are starting to become accessible with the help of defect centers in diamond. Indeed, the detection of tiny magnetic fields emanating from small numbers of spins in biological or condensed matter environments holds the promise for a wide variety of potential applications. In this lecture I will explain which strategies may allow sensing to be achieved in the presence of unavoidable environmental noise and follow this with outlining a variety of new approaches to use this tool to develop new designs for quantum simulators and novel bio-nano quantum devices exploiting the self-assembling capabilities of biological systems. The lecture will present both the theory underlying these ideas and first experimental results on our way to achieve these goals.