



Walther-Meißner-Institut

Bayerische Akademie der Wissenschaften



## Walther-Meißner-Seminar

Walther-Meißner-Institut, Seminar Room 143

Date: **Special date: Monday, 19 December 2016, 10:00h**

Speaker: **Dr. Daniel Braak**

*Institut für Physik, Lehrstuhl für Experimentalphysik VI,  
Universität Augsburg, Universitätsstr. 1, D-86135 Augsburg, Germany*

Title: **Models of light-matter interaction: Symmetries and Solutions**

### Abstract:

The quantum Rabi model (QRM) constitutes the simplest theoretical description of the interaction between the quantized light field and a material spin-1/2 system (a qubit). Many important features of experimentally realizable systems are correctly captured by restricting the bosonic degrees of freedom to a single oscillator mode. Despite its simplicity, the QRM displays rich physics and several obstacles to an analytical solution. In both cases, a key role is played by the various symmetries of the model and its generalizations.

I shall give an introduction to these topics in general and discuss especially the quasi-exact states in multi-qubit systems and the conjectured hidden symmetry of the biased QRM.