JOHANNES KEPLER
UNIVERSITÄT LINZ
Netzwerk für Forschung, Lehre und Praxis

Computational Science Colloquium

organized by the Computational Science Initiative at the JKU

Invitation

to a public talk (with following discussion)

Title:	„**Optimal Design and Modeling of Magnetic Devices and Related Topics**"
Lecturer:	Prof. Norio Takahashi (Okayama University, Japan)
Date:	Tuesday, **Sep 14, 2010**, **10:00**
Place:	**MZ 003A**, University of Linz

The magnetic field analysis is widely used in order to design a miniature and highly efficient electrical machines and electronic equipments. However, there are sometimes discrepancies between the calculation and measurement. This may be due to the insufficient modeling of magnetic characteristics, by ignoring, for example the effect of stress, temperature dependence of magnetic properties. In this lecture, recent development of modeling of magnetic characteristics including newly measured results is discussed, and the necessity of the consideration of real working conditions of magnetic properties for the precise analysis of magnetic devices is illustrated. Moreover, a topology optimization method called as ON/OFF method is explained and some attractive applications are shown.

1. Real working conditions of magnetic material
   - Stress (compressive stress, cutting stain, shrink fitting)
   - Temperature
2. Modeling of magnetic devices
   - Iron loss of motor
   - Analysis of IH considering temperature dependence of magnetic properties
3. Optimal design of magnetic device using ON/OFF method