



Siegen, den 24.02.2012

Oberseminar Geomathematik

Im Rahmen des Oberseminars der AG Geomathematik findet der folgende Gastvortrag statt, zu dem hiermit alle Interessierten recht herzlich eingeladen sind. Der Vortrag wird von

Dr. Christian Gerhards (TU Kaiserslautern)

am

Freitag, den 16.03.2012 um 14:30 Uhr

im Raum ENC-B 205

gehalten zum Thema

**„Boundary Value Problems on the Sphere
(Motivated by Problems in Geomagnetism)“.**

Prof. Dr. V. Michel

Boundary Value Problems on the Sphere (Motivated by Problems in Geomagnetism)

The variety of mathematical problems arising in the modeling of the Earth's magnetic field is tremendous. Examples are the determination of radial and tangential current densities and the separation of the magnetic field into internal and external contributions. We give a brief introduction on how some of these topics reduce to purely spherical problems and motivate boundary value problems on the sphere.

For the basic spherical operators Δ^* and $\Delta^* + \lambda$ (i.e., the Beltrami operator and the spherical Helmholtz operator), we then study the boundary value problems in more detail. Classical results like limit and jump relations can be transferred from a Euclidean setting in \mathbb{R}^n to a spherical setting. Despite the similarities to the Euclidean setting, there are differences and problems intrinsic to the sphere. These differences and problems will be discussed in the talk together with some possible applications.