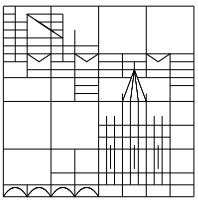
Universität Konstanz

Fachbereich
Mathematik und Statistik



Prof. Dr. Robert Denk
Prof. Dr. Heinrich Freistühler
Prof. Dr. Reinhard Racke
Prof. Dr. Oliver Schnürer

Im

Oberseminar Partielle Differentialgleichungen

gibt es am

Donnerstag, dem 6. Februar 2014,

einen Vortrag von

Prof. Dr. Yoshihiro Ueda

(Kobe University, Japan)

"Dissipative property for symmetric hyperbolic systems with non-symmetric relaxation"

Beginn: **15:15 Uhr**

Raum: **F 426**

Interessenten sind herzlich willkommen!

R. Denk, H. Freistühler, R. Racke, O. Schnürer

Abstract: The results of this talk are based on a joint work with Shuichi Kawashima (Kyushu University) and Renjun Duan (Chinese University of Hong Kong).
In this talk, we consider the Cauchy problem for the first-order linear symmetric hyperbolic system of equations with relaxation. For this general linear degenerately dissipative system it is interesting to study its decay structure under additional conditions on the coefficient matrices and further investigate the corresponding time-decay property of solutions to the Cauchy problem. When the degenerate relaxation matrix is symmetric, Umeda-Kawashima-Shizuta proved the large-time asymptotic stability of solutions for a class of equations of hyperbolic-parabolic type with applications to both electro-magneto-fluid dynamics and magnetohydrodynamics. The typical feature of the time-decay property of solutions established in those work is that the high frequency part decays exponentially while the low frequency part decays polynomially with the rate of the heat kernel.
Unfortunately, when the degenerate relaxation matrix is not symmetric, that results can not be applied any longer. In fact, this is the case for some concrete systems, for example, the Timoshenko system and the Euler-Maxwell system, where the linearized relaxation matrix indeed has a nonzero skew-symmetric paart while it was still proved that solutions decay in time in some different way. Therefore, our purpose of this talk is to formulate some new structural conditions in order to extend the previous works to our general system when the relaxation matrix is not symmetric, which can include both the Timoshenko system and the Euler-Maxwell system.

(invited by Prof. Dr. Reinhard Racke)