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**Einladung zum Vortrag im Rahmen des Graduiertenkollegs 615  
„Interaktion von Modellbildung, Numerik und Software-Konzepten für  
technischwissenschaftliche Problemstellungen“**

**Montag, 13. Juli 2009, 16.00 Uhr, A134, Appelstr. 11, 1. OG**

**“Thin elastic plates with corners: regularity theory and its  
application”**

by

**T. S. Gerasimov, TU Delft**

A thin (anisotropic) elastic plate is one of the main constructive element of many thin-walled engineering structures. A conventional geometry for such a plate is a polygon, that is, a planar domain with corners. From the engineering practice it is well known that the presence of reentrant (i.e. concave) corners may cause a significant reduction or even the loss of a load-carrying capacity of a plate. This happens due to concentration of stresses which appear near corner points and which can be extremely high.

This talk deals with a problem of a small vertical deformation of an anisotropic Kirchhoff plate with corners. Within the scope of the Kondratiev regularity theory for linear elliptic boundary value problems in non smooth-domains, we will explain in which way corner singularities in a weak solution for the problem at hand appear.

We will bring a simple example when being unaware of the theory underlined one fails to produce the correct solution even using the reasonable approach. Next to this the comparison between the isotropic and some particular orthotropic cases in question will be considered. The analytic results are illustrated by numerical experiments.

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