

**COLLOQUIUM
OF THE
DEPARTMENT OF MATHEMATICS AND STATISTICS
AND
MATHEMATICAL SCIENCES GROUP**

Friday, March 11, 2005
4:00 p.m.
214 ARTS

SPEAKER

Professor Josef Dorfmeister,
TU-MUENCHEN
ZENTRUM MATHEMATIK
GERMANY

TITLE

Harmonic Maps and Loop Groups

ABSTRACT

Harmonic maps are critical points for some energy functional. They occur naturally in biology and physics. The talk will concentrate on a discussion of harmonic maps from surfaces to certain manifolds (symmetric spaces). The description of these maps involves a nonlinear partial differential equation, which is difficult to solve. However, due to the special circumstances under consideration one can devise some procedure that produces all harmonic maps from surfaces to symmetric spaces from unconstrained data.

We will give examples for the procedure. In particular for the case, where the symmetric space is the unit sphere in space. It is well known that these harmonic maps correspond exactly to the class of surfaces in space of constant mean curvature. Thus, as an illustration of the method, we will discuss the construction of surfaces of constant mean curvature and illustrate the theory by pictures of such surfaces and a short video .

Tea and cookies at 3:20 pm in the lounge.