

EINLADUNG

zum

HABILITATIONSVORTRAG

Dr. Volker Branding
(Fakultät für Mathematik)

**“The supersymmetric nonlinear sigma model as a
geometric variational problem”**

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Abstract:

The supersymmetric nonlinear sigma model is an important model in modern quantum field theory.

Its action functional is fixed by various symmetries including the invariance under supersymmetry transformations. When neglecting the latter this model can be studied as a geometric variational problem for a map between two manifolds and a spinor defined along that map.

In the case of a Riemannian domain its critical points couple the harmonic map equation to spinor fields, these became known as Dirac-harmonic maps and variants thereof. If the domain manifold is Lorentzian, the critical points couple the wave map equation to spinor fields.

After providing the necessary mathematical background we will present several results that characterize the qualitative behavior of Dirac-harmonic maps and their extensions such as the regularity of weak solutions, a vanishing result for solutions with small energy and a removable singularity theorem.

Moreover, we will discuss several existence results in the case of a Lorentzian domain.

**Mittwoch, 27. März 2019,
13:15 Uhr – 14:00 Uhr,**

**Fakultät für Mathematik,
Ort SR. 06, 1 OG.
Oskar-Morgenstern-Platz 1
1090 Wien**

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