

FREIE UNIVERSITÄT BERLIN
Fachbereich Mathematik und Informatik

Promotionsbüro, Arnimallee 14, 14195 Berlin

D I S P U T A T I O N

Donnerstag, 6. Juni 2013, 10.00 Uhr

Ort: Arnimallee 6, Raum 108/109, 14195 Berlin

Disputation über die Doktorarbeit von

Herrn Dipl.-Ing. Christian Schulz

Thema der Dissertation:

**Interactive Spacetime Control of Deformable Objects
and Modal Shape Analysis beyond Laplacian**

Thema der Disputation:

Geometric modeling of meshes: A model reduction approach

Die Arbeit wurde unter der Betreuung von **Prof. Dr. K. Polthier** durchgeführt.

Abstract: We present a robust and intuitive strategy for the deformation of high resolution meshes at interactive rates [1]. The deformations we consider are solutions to a non-linear optimization problem that models the elastic behavior of shapes under external forces that are controlled by the user.

Motivated by the observation that a typical modeling session requires only a fraction of the full shape space of the underlying model, an appropriate low-dimensional shape space is constructed as the feasible set for the optimization. The interactive response times are achieved by using a coarse energy approximation in combination with this reduced shape representation and further improved by using an efficient quasi-Newton solver.

[1] Klaus Hildebrandt, Christian Schulz, Christoph von Tycowicz, Konrad Polthier, "Interactive surface modeling using modal analysis", ACM Transactions on Graphics, Volume 30, Issue 5, October 2011, pages 119:1-119:11.

Die Disputation besteht aus dem o. g. Vortrag, danach der Vorstellung der Dissertation einschließlich jeweils anschließenden Aussprachen.

Interessierte werden hiermit herzlich eingeladen

Der Vorsitzende der Promotionskommission
Prof. Dr. K. Polthier