

In der Reihe „Chemnitzer Mathematisches Colloquium“ der Fakultät für Mathematik der TU Chemnitz spricht

Frau Prof. Dr. Gabriele Steidl (TU Kaiserslautern)

über das Thema

Morphing of Manifold-Valued Images.

Der Vortrag findet am

Donnerstag, dem 5. April 2018, um 16.00 Uhr im Raum B202, Reichenhainer Straße 70

statt.

Ich möchte Sie hiermit recht herzlich zu dieser Veranstaltung einladen. Das Kolloquium wird von Herrn Prof. Dr. Daniel Potts geleitet.

Abstract:

This paper addresses morphing of manifold-valued images based on the time discrete geodesic paths model of Berkers, Effland and Rumpf. We prove the existence of a minimizing sequence within the set of $L^2(\Omega, \mathbb{H})$ of functions having values in a finite dimensional Hadamard manifold \mathbb{H} together with a minimizing sequence of admissible diffeomorphism. To this end, we show that the continuous manifold-valued functions are dense in $L^2(\Omega, \mathbb{H})$. We propose a space discrete model based on a finite difference approach on a staggered grid, where we focus on the linearized elastic potential in the regularizing term. The numerical minimization alternates between i) the computation of a deformation sequence between given images via the parallel solution of certain registration problems for manifold-valued images, and ii) the computation of an image sequence with fixed first (template) and last (reference) frame based on a given sequence of deformations.

Finally, we show some examples, where the Euclidean model is useful, as face colorization and limited angle tomography.

Prof. Dr. Christoph Helmberg
Dekan

