

# VARIATIONAL METHODS FOR DYNAMIC IMAGE ANALYSIS

**O. Scherzer**<sup>1,2</sup>

<sup>1</sup>Computational Science Center, University Vienna,  
Oskar-Morgensternplatz 1, 1090 Vienna, Austria

<sup>2</sup>Radon Institute of Computational and Applied Mathematics,  
Altenbergerstraße 69, 4020 Linz, Austria

In this talk we present tracking and registration methods for data analysis of image sequences and movies. These techniques are applied to analyze common movies, microbiological cell data and elastography movies, respectively.

A common approach, which is applicable to these different applications, is regularization. This approach is flexible enough to be adoptable to the different needs of various applications outlined in this talk. The different realizations are implemented by different regularization energies in the optimization energies.

Analytical questions related to regularization are existence and uniqueness of minimizers, and stability properties, which are discussed in detail.

This talk is based on joint work with Clemens Kirisits, Lukas Lang, Aniello Patrone and Thomas Widlak (University of Vienna).