Einladung zum

Würzburger Mathematischen Kolloquium

Julius-Maximilians-Universität Würzburg • Fakultät für Mathematik und Informatik

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Dynamic imaging

Antrittsvorlesung

Mittwoch, 7. Dez. 2016 • 16:15 Uhr

Raum SE 40, Mathematik Ost, Emil-Fischer-Str. 40, Campus Hubland-Nord

Inhaltsangabe

Tomographic techniques provide powerful tools for non-invasive imaging with various applications from clinical diagnosis to non-destructive testing. Since they acquire indirect measurements, the searched-for image has to be reconstructed from the collected data by solving an inverse problem.

This reconstruction process is well understood if the object under investigation ist stationary during the data acquisition. However, this assumption is violated in many medical and industrial applications, e.g. due to patient and organ motion or while imaging fluid flow. The dynamic behavior of the object during the data collection leads to an inconsistent data set. Therefore, standard reconstruction techniques lead to motion artefacts in the computed images, e.g. blurring, ghosting, etc., which can significantly impede a reliable diagnostics. Therefore, the reconstruction method has to take the time-dependency into account. The mathematical model of this dynamic problem reveals that some additional information about the motion are required.

In this talk, we present reconstruction algorithms that compensate for the object's deformation, and we evaluate them at numerical examples from computerized tomography. Further, we discuss the effect of the dynamic behavior on the quality of the reconstructed images.

Zu diesem Vortrag laden wir Sie herzlich ein.
Im Anschluss an den Vortrag findet ein Stehempfang statt.

Die Dozentinnen und Dozenten der Mathematik