

# Algorithms for locally changing objects in computerized tomography

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The data acquisition in computerized tomography is time-dependent since the x-ray source has to be rotated around the investigated object. Temporal changes of the object during this time period lead to inconsistent data. Hence, the application of standard reconstruction methods causes motion artefacts in the images which can severely impede the diagnostic analysis.

To reduce the motion artefacts, the reconstruction method has to take into account the dynamic behaviour of the specimen. To estimate and compensate for the object's motion, it is essential to first determine from the measured data whether the object has changed. In case of local deformations, which in general take place solely in the specimen's interior, one also has to identify the areas affected by the motion.

Therefore, we propose a method that detects moving parts and their location directly from measured Radon data. In addition, a reconstruction method is presented to compensate for local deformations. The performance of both detection and reconstruction method is illustrated at numerical results.