



International Journal of Biomedical Imaging

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Research Article

Exact Interior Reconstruction with Cone-Beam CT

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Abstract

Using the backprojection filtration (BPF) and filtered backprojection (FBP) approaches, respectively, we prove that with cone-beam CT the interior problem can be exactly solved by analytic continuation. The prior knowledge we assume is that a volume of interest (VOI) in an object to be reconstructed is known in a subregion of the VOI. Our derivations are based on the so-called generalized PI-segment (chord). The available projection onto convex set (POCS) algorithm and singular value decomposition (SVD) method can be applied to perform the exact interior reconstruction. These results have many implications in the CT field and can be extended to other tomographic modalities, such as SPECT/PET, MRI.

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