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Variable Weighted Ordered Subset Image Reconstruction Algorithm

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Abstract

We propose two variable weighted iterative reconstruction algorithms (VW-ART and VW-OS-SART) to improve the algebraic reconstruction technique (ART) and simultaneous algebraic reconstruction technique (SART) and establish their convergence. In the two algorithms, the weighting varies with the geometrical direction of the ray. Experimental results with both numerical simulation and real CT data demonstrate that the VW-ART has a significant improvement in the quality of reconstructed images over ART and OS-SART. Moreover, both VW-ART and VW-OS-SART are more promising in convergence speed than the ART and SART, respectively.