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**A Hybrid Algebraic/Inverse Radon Transform method for Region of Interest reconstruction of Computed Tomography Images** MARCO A. BARRERA-CRUZ, University of Texas at EL Paso, MARIAN MANCIU, UTEP — Computed tomography is an advanced method in medical imaging. The main shortcoming of it is the relatively high dose of radiation used to imaging. Consequently, a large effort has been made to obtain good image reconstructions from fewer projections. Inverse Radon Transform (IRT) lead a very good image reconstruction with large number of projection ( $\sim 100$ ), but the method is not accurate when is  $< 30$  projections. Algebraic methods are very efficient for small images; unfortunately, for an  $256 \times 256$  image, the coefficients of the linear system' matrix is about  $10^9$ . We propose here a novel method, in which fewer projections ( $\sim 30$ ) are employed for reconstruction. An intermediate reconstruction of poor quality is obtained via IRT and a Region of Interest (ROI) is selected. The contribution of the ROI to the total projections data is isolated and used for the algebraic reconstruction of the ROI image. This procedure reduce the coefficients from  $10^9$  to  $\sim 10^4$  elements.

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