1067-45-274 **Margo S. Levine*** (margo@pet.mgh.harvard.edu), **Emil Y. Sidky** and **Xiaochuan Pan**.

Consistency Conditions for Cone-Beam CT Data Acquired with a Linear Source Trajectory.

A consistency condition is developed for computed tomography (CT) projection data acquired from a linear X-ray source trajectory. The condition states that integrals of normalized projection data along detector lines parallel to the X-ray path must be equal. The projection data is required to be untruncated only along the detector lines parallel to the X-ray path, a less restrictive requirement compared to Fourier conditions that necessitate completely untruncated data. The condition is implemented numerically on simple image functions, a discretization error bound is estimated, and detection of motion inconsistencies is demonstrated. The results show that the consistency condition may be used to quantitatively compare the quality of projection data sets obtained from different scans of the same image object. (Received August 15, 2010)