Meeting: 1003, Atlanta, Georgia, SS 5A, AMS Special Session on Radon Transform and Inverse Problems, I

1003-44-694   **Steven H Izen*** (`shi@cwru.edu`), Case Western Reserve University, Department of Mathematics, Yost 220, Cleveland, OH 44106. *An Analysis of the Fan Beam CT Reconstruction Kernel.*

The standard two-dimensional fan beam CT reconstruction formula recovers an essentially bandlimited function f as an integral of the product of its fan beam transform Df with a bandlimited kernel. While the essential bandregion of Df has been well-known for years, the essential bandregion of the fan beam kernel has only been determined numerically.

In this talk, the essential bandregion of the fan beam kernel will be computed analytically. In particular, it will be shown that the kernel's essential bandregion actually differs from that of Df. As a result, to reconstruct f at its essential bandwidth, the required sample density must be finer than is implied by examining only the bandregion of Df. (Received September 27, 2004)