1003-45-1301 **Frederic Noo*** (`noo@ucair.med.utah.edu`), UCAIR, 729 Arapeen Dr., Salt Lake City, UT 84108, and **Jed D Pack** and **Rolf Clackdoyle**. *A 2-step Hilbert transform method for image reconstruction in cone-beam tomography.*

In this talk, a flexible new method is described for accurate cone beam reconstruction with source positions on a curve or a set of curves. The method first computes the Hilbert transform of the 3D density function along some lines in space called M-lines, using a weighted backprojection of locally-filtered projections. Next, the Hilbert transform is inverted to get the density function on the M-lines. Because the density function has a compact support on any M-line, the Hilbert transform on any M-line only needs to be know over that support. This property combined with the way the Hilbert transform is formed is shown to allow in some cases cone-beam reconstruction with much less data than has previously been done or believed to be possible (Received October 04, 2004)