962-44-1076 **Alexander Katsevich*** (akatsevi@pegasus.cc.ucf.edu), Department of Mathematics, University of Central Florida, P.O. Box 161364, Orlando, FL 32816-1364. *Analysis of a filtered back projection algorithm for truncated spiral cone beam data.*

In this talk we propose a filtered back-projection (FBP) algorithm for inversion of spiral cone beam data and discuss its theoretical properties. We show that the algorithm does not reconstruct f exactly, but computes the result of applying a pseudo-differential operator (PDO) $\mathcal{B}$ with singular symbol to f. The complete symbol of $\mathcal{B}$ is found. Microlocally away from critical directions the symbol is homogeneous of order zero in the dual variable, bounded, and the operator itself behaves just like an ordinary PDO. As the pitch of the spiral goes to zero $\mathcal{B}$ approaches the identity operator in some sense. Numerical experiments demonstrate that even when the pitch of the spiral is relatively large, the accuracy of reconstruction is quite high. On the other hand, under certain circumstances, the algorithm produces artifacts typical of all FBP-type algorithms. These artifacts are due to the non-smoothness of the symbol of $\mathcal{B}$. The nature of artifacts is also discussed. (Received October 02, 2000)