1023-44-934 **Michael Kapralov*** (mikhail@mail.ucf.edu) and **Alexander Katsevich**. *A 1PI algorithm for helical trajectories that violate the convexity condition.*

In this talk we develop an exact filtered backprojection (FBP) reconstruction algorithm for dynamic pitch helical trajectories when the convexity condition is violated. The algorithm is a modification of the original inversion formula, which was proposed earlier by one of the authors for a constant pitch helix. Two filtering lines are added to the algorithm to guarantee exactness. We also study the region where the algorithm applies. It does not extend all the way to the helix, but its size depends on the severity of the violation. If the violation is not very strong, then the region is sufficiently large. Results of numerical experiments are presented. (Received September 23, 2006)