

1133-44-221

**Alexander Katsevich\*** ([alexander.katsevich@ucf.edu](mailto:alexander.katsevich@ucf.edu)), Mathematics Department, University of Central Florida, Orlando, FL 32816, and **Alexander Tovbis**, **Elliot Blackstone** and **Marco Bertola**. *Finite Hilbert transforms - spectral analysis and applications in tomography*. Preliminary report.

In this talk we study the interior problem of tomography by reducing it to the problem of inverting the finite Hilbert transform (FHT) with incomplete data. In particular, the degree of ill-posedness of solving the interior problem can be deduced from the spectral properties of the corresponding integral operators. We illustrate different types of interior problems and the associated FHTs. Spectral analysis of the latter is based on the technique of the commuting differential operator in simple cases, and on the technique of the Riemann-Hilbert Problem - in general cases. We also describe one simple case, where the resolvent operator and resolution of the identity can be computed explicitly. (Received July 31, 2017)