1056-65-2123          **M. Zuhair Nashed\*** (`znashed@mail.ucf.edu`), Department of Mathematics, University of
Central Florida, Orlando, FL 32816. *Moment Problems in Reproducing Kernel Hilbert Spaces.*

The problem of recovery or estimation of a function from its moments arises in several areas of the geosciences. Seminal contributions in this context have been made by Backus and Gilbert, Sabatier, and others. In this talk, I will provide new perspectives on the Backus-Gilbert method for the numerical moment problem. The incorporation of a priori information about the signal and the the sense of approximation of the delta function by various delta sequences and in different Sobolev spaces of negative norms give rise to interesting optimizational and numerical analysis problems. We also consider connections between average sampling and the problem of reconstruction of a signal from its momemts. We explore some of these aspects in particular for signals belonging to reproducing kernel Hilbert spaces. (Received September 23, 2009)