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Gotz Pfander and **David Walnut*** (dwalnut@gmu.edu), Department of Mathematical Sciences, George Mason University, MSN 3F2, Fairfax, VA 22030. *Recent Developments in Operator Sampling.*

Operator Sampling is a generalization of classical sampling in which the objects being reconstructed from limited data are operators rather than functions. This theory is an outgrowth of the pioneering work of T. Kailath and P. A. Bello in the 1950s and 1960s in which theoretical constraints are found limiting the ability to identify a mobile communication channel by sounding it with a single testing signal. The motivation for investigating these questions arose in part from work in the 1950s on spread-spectrum communications.

In this talk we will briefly describe the problems being investigated, and the tools from time-frequency analysis that are brought to bear on their solution. In particular, we will show that operator sampling contains as a special case classical sampling. Finally we will draw connections to recent results in the theory of finite Gabor frames, to the capacity of time-varying communication channels, and to the measurement of stochastic channels. (Received August 14, 2014)