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**Ronny Hadani\*** (hadani@math.utexas.edu), 1 University station C1200, Austin, TX, and  
**Shamgar Gurevich** and **Nir Sochen**. *Group representation patterns in digital signal processing*.

In the lecture I will explain how various fundamental structures from group representation theory appear naturally in the context of discrete harmonic analysis and can be applied to solve concrete problems from digital signal processing. specifically, I will describe a solution to the problem of finding a canonical orthonormal basis of eigenfunctions for the discrete Fourier transform (DFT). Then I will explain how to generalize the construction to obtain a larger collection of functions that we call "The oscillator dictionary". Functions in the oscillator dictionary admit many interesting properties, which are appealing to various area of digital signal processing. (Received September 22, 2009)