

abstract

COMPUTER SCIENCE/DISCRETE MATH II

Topic:

Speaker:

Affiliation:

Date:

Time/Room:

In the lecture we 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. We will begin the lecture by describing our solution to the problem of finding a canonical orthonormal basis of eigenfunctions of the discrete Fourier transform (DFT). Then we 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, in particular, we will explain several of these properties which arise in the context of problems of current interest in areas such as communication and radar. Joint work with Nir Sochen (Tel Aviv).