Abstract:
Large amounts of data now stream from daily life; data analytics has been helping to discover hidden patterns, correlations and other insights. This talk introduces the mode decomposition problem in the analysis of oscillatory data. This problem aims at identifying and separating pre-assumed data patterns from their superposition. It has motivated new mathematical theory and scientific computing tools in applied harmonic analysis. These methods are already leading to interesting and useful results, e.g., electronic health record analysis, microscopy image analysis in materials science, art and history.