INA Institute for Mathematics and its Applications

July 20 - August 7, 2015

PI Summer Graduate Program **Modern Harmonic Analysis and Applications** University of Maryland

ORGANIZERS/LECTURERS

Radu Balan, University of Maryland John Benedetto, University of Maryland Wojciech Czaja, University of Maryland Kasso Okoudjou, University of Maryland

GUEST LECTURERS

Anna Gilbert, University of MichiganChristopher Heil, Georgia Institute of TechnologyGilad Lerman, University of Minnesota

Modern Harmonic Analysis encompasses areas as diverse as group representation theory, functional analysis and applications in signal processing, machine learning and data analysis. These techniques deliver the answers desired by engineers and scientists working with big data sets or searching for novel methods to connect experiments with theory. With the new form of the Moore's Law, where CPU clock frequency doubling is replaced by parallel processing, the applied mathematics community is now faced with a new paradigm. Together, with the annual February Fourier Talks (FFT) Conference organized by the Norbert Wiener Center at UMD, we envision the 2015 PI Graduate Student Summer Program at UMD as an educational platform reaching out to the next generation of STEM graduates and complementing existing research activities.

The following lectures will be delivered over the three-week summer school: John Benedetto: Fourier analysis Christopher Heil: Frames and time-frequency analysis Kasso Okoudjou: Preconditioning of finite frames Radu Balan: Nonlinear analysis with frames Anna Gilbert: Sparse Fourier transform Gilad Lerman: Geometric and analytic methods for modeling data and applications Wojciech Czaja: Harmonic analysis and big data

Applications will open on January 5, 2015 and will be accepted until April 30, 2015.

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