

SCMS Seminar



NEGATIVE DEFINITE LENGTH FUNCTIONS ON FINITE ABELIAN GROUPS: RAMANUJAN, EULER, AND MOBIUS

Speaker: Professor Martin Walter
University of Colorado Boulder

Time: 14:00 p.m.-15:00 p.m., Thursday, June 16, 2016

Venue: Room 2001, East Guanghua Tower (Main), Fudan University

Abstract: For an abelian, finite group we define in a canonical way the length of each element and arrive at an n by n matrix of integers (where n is the order of the group). Calculating the eigenvalues of this matrix involves calculating the Fourier transform of the GCD (greatest common divisor) function and other concepts of number theory and functional analysis.

$$k_2 = hf(x_1 + \frac{1}{2}v_1 + \frac{1}{2}v_2)$$
$$b_i = \frac{(\sum_{j=1}^i a_{ij}x_j^{(i)} + \sum_{j=i+1}^n a_{ij}x_j^{(i)})}{x_{i+1}^{a_{ij}}}$$
$$\Delta y_i = \int_{x_i}^{x_{i+1}} y' dx = \frac{a_{ij} b_i - (\sum_{j=1}^i a_{ij}x_j^{(i)} + \sum_{j=i+1}^n a_{ij}x_j^{(i)})}{x_i^{a_{ij}}}$$
$$\int_{x_k}^{x_{k+1}} f(x, y) dx = \int_{x_k}^{x_{k+1}} y' dx = y(x)$$
$$\sqrt{(y_n + 0.5\tau k_1)^2 + (t_n + 0.5\tau)^2}$$