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# Colloquium

## *Asymptotic behaviors of generalized Thue-Morse Trigonometric Polynomials*

**Professor Weixiao Shen**  
Fudan University

### Abstract

Let  $S_q(n)$  denote the sum of digits of  $q$ -expansion of  $n$ , and consider the generalized Thue-Morse sequences defined by  $t_n^{(c)} = e^{2\pi c S_q(n)}$ . We study the uniform norm of the trigonometric polynomials  $\sigma_N^{(c)}(x) = \sum_{n=0}^{N-1} t_n^{(c)} e^{2\pi i x}$ , using the theory of ergodic optimization. We shall also show that  $q^{-n} |\sigma_{q^n}(x)|$  behaves like  $e^{n\alpha(x)}$  with  $\alpha(x)$  multifractal. This is a joint work with Fan and Schmeling.

Date: 30 January 2019 (Wednesday)  
Time: 2:30pm - 3:30pm  
Venue: Room 219, Lady Shaw Building,  
The Chinese University of Hong Kong, Shatin

*All are Welcome*