

# İSTANBUL ANALYSIS SEMINARS

## HARMONIC ANALYSIS ON LATTICES IN POSITIVE CHARACTERISTIC

Mikhail ZAIDENBERG

Institut Fourier, Grenoble  
Laboratoire de Mathématiques

**Abstract:** The solitary game ‘Lights out’ is discussed in the work of Sutner, Goldwasser-Klostermayer-Ward, Barua-Sarkar, Hunziker-Machiavello-Park, et al. Suppose that the interruptors in a building are synchronized so that switching off in one office automatically changes the state to the opposite in all neighbor offices separated by a wall. How can one switch all the lights off? Numerous problems arose and mainly remain open. They can be formulated as spectral problems, in terms of harmonic analysis, or as problems about Chebychev polynomials. The Fourier transform translates these problems into unusual but intriguing questions in arithmetic algebraic geometry, concerning torsion on a certain elliptic curve. Some advances, generalizations, and computer simulations done by Don Zagier will be presented.

**Date:** May 9, 2014

**Time:** 17:00

**Place:** Sabancı University, Karaköy Communication Center  
Bankalar Caddesi 2, Karaköy 34420, İstanbul

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