1139-37-102   **Sebastian Donoso**, **Ahn Lee**, **Joel Moriera** and **Wenbo Sun*** (`sun.1991@osu.edu`), 281 W. Lane Ave., Columbus, OH 43210. *Quantitative recurrence theorem and solution counting problem.*

Let $p_1, \ldots, p_d$ be linear functions. In ergodic theory, the quantitative recurrence theorem studies the lower bound for the measure of the set $A \cap T^{p_1(n)} A \cap \cdots \cap T^{p_d(n)} A$ over a large set of return time n. Let $p(x_1, \ldots, x_n)$ be a linear function with n variables. In combinatorics, the solution counting problem studies the number of solutions for the equation $p(x_1, \ldots, x_n) = 0$ for $x_1, \ldots, x_n$ lying in a given subset of integers. In this talk, I will talk about recent advances for these topics, and discuss the connection between these two questions. This is joint work with Sebastian Donoso, Anh Lee and Joel Moreira. (Received February 03, 2018)