

Philadelphia Area Number Theory Seminar

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Lagrange spectrum for Romiks dynamical system

Abstract:

Call (p, q) a Pythagorean pair if p and q are positive coprime integers such that $p^2 + q^2$ is a perfect square. Draw a line ℓ from the origin into the first quadrant of the xy -plane. Suppose we want ℓ to avoid all but finitely many Pythagorean pairs with as large a margin as possible. Which ℓ is best? Which is second best?

In this talk, we will introduce a dynamical system originally defined by Romik in 2008, study its Lagrange spectrum, and explain how our results can answer the above questions. We will review some well-known results on simple continued fractions and their Lagrange and Markoff spectra. This will provide a classical counterpart to our theory on Romiks dynamical system.

This is joint work with Dong Han Kim (Dongguk University, South Korea). A large part of our talk will be accessible to undergraduates.

Wednesday, July 11, 2018
2:40 – 4:00 PM

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Tea and refreshments at 2:20PM in Park 339