The Markoff Unicity Conjecture: when one door closes, another opens!

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Abstract

The Markoff Unicity Conjecture is a 108-year old conjecture about the solution set of the Diophantine equation $x^2+y^2+z^2 = xyz$. The solutions, called Markoff numbers, turn up in a variety of settings, from combinatorics, to number theory, to geometry and graph theory. In this talk, we will look at the translation of the conjecture to the world of hyperbolic geometry, arguing why this approach fails to bring us closer to a proof of unicity. Then, we will look at a more promising translation to analytic number theory. Time permitting, we will go through the elementary proof that the MUC holds for all prime powers.

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