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Omer Yildiz* (omeryildiz2018@gmail.com), 3 sudbury dr, Rochester, NY 14624. *Applications of Quadratic Reciprocity to Finite Diophantine Equations.*

Quadratic reciprocity theorem has a lot of applications in pure mathematics and especially number theory. It has been studied all the way since Gauss till today's most prominent number theorists. The law of quadratic reciprocity is a theorem that provides conditions on the solvability of quadratic equations modulo prime numbers. In this talk, we present the applications of quadratic reciprocity to two types of Diophantine equations. One is in the form $ax_1 + bx_2 = c$ where a, b, c are constants with variables x_1, x_2 . The other is in the form of $c_1x_1^2 + c_2x_2^2 + \dots + c_nx_n^2 = k$ for some k where c_1, \dots, c_n are sums of two squares with variables x_1, \dots, x_n for some n . (Received August 30, 2015)