

Regularity conditions of positive definite quadratic forms.

Alicia Marino

A quadratic form is a quadratic polynomial with no linear or constant term. In the arithmetic theory of integral quadratic forms, a main question is the representation problem: given an integral quadratic form f , for which integers a does there exist a solution to $f(x) = a$? Attempts to answer this question have led to the study of many different types of quadratic forms. We call a quadratic form *regular* if certain local conditions imply the existence of a solution over the rational integers. We can strengthen this notion of regularity to *strict regularity* by demanding that the solutions are primitive, i.e. the coordinates of the solutions are relatively prime. In this talk, we will explore quadratic forms of these types and consider known results in this area. I will also discuss a recent result (joint with W. K. Chan) on the finiteness of strictly n -regular quadratic forms.