

Title and Abstract

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Title: There is no analogue of 290-theorem for higher degree forms.

Abstract: A *universal* quadratic form is a positive definite quadratic form with integral coefficients which represents all positive integers – a classical example being the sum of four squares $x^2 + y^2 + z^2 + w^2$. The 290-Theorem of Bhargava and Hanke characterizes positive definite quadratic forms over rational integers that are universal as exactly the forms that represent $1, 2, 3, \dots, 290$.

In this talk, I will discuss universality of *higher degree forms* (i.e. homogeneous polynomials of degree $m > 2$) and I will prove that no statement like the 290-Theorem can hold for them. If time permits, I will conclude with the more general case of forms over *totally real* number fields. This is a joint work with Vítězslav Kala.