



MANHATTAN ALGEBRA DAY

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Masser's conjecture on equivalence of integral quadratic forms

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CUNY Graduate Center, Room C-201
3:40pm

Abstract:

A classical problem in the theory of quadratic forms is to decide whether two given integral quadratic forms are equivalent. Formulated in terms of matrices the problem asks, for given symmetric n -by- n integral matrices A and B , whether there is a unimodular integral matrix X satisfying $A = X'BX$, where X' is the transpose of X . For definite forms one can construct a simple decision procedure. Somewhat surprisingly, no such procedure was known for indefinite forms until the work of C. L. Siegel in the early 1970s. In the late 1990s D. W. Masser conjectured for n at least 3, there exists a polynomial search bound for X in terms of the heights of A and B . In this talk we shall discuss our recent resolution of this problem based on a joint work with Professor Gregory A. Margulis, and also explain how ergodic theory is used to understand integral quadratic forms.