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Bounds for the Least Solution of Homogeneous Quadratic Diophantine Inequalities.

Let Q be a non-degenerate indefinite quadratic form in d variables. In the mid 80's, Margulis proved the Oppenheim conjecture, which states that if $d \geq 3$ and Q is not proportional to a rational form then Q takes values arbitrarily close to zero at integral points. In this talk we will discuss the problem of obtaining bounds for the least integral solution of the Diophantine inequality $|Q[x]| < \epsilon$ for any positive ϵ if $d \geq 5$. We will show how to obtain explicit bounds that are polynomial in ϵ^{-1}, with exponents depending only on the signature of Q or if applicable, the Diophantine properties of Q. This talk is based on joint work with P. Buterus, F. Götze and G. Margulis.