1041-11-301   **Jonathan Hanke*** (`jonhanke@math.uga.edu`), Department of Mathematics, University of
Georgia, Athens, GA 30602-7403. *Class numbers and Mass formulas for quadratic forms.*

This talk will describe some results using exact mass formulas to determine quadratic forms of small class number, particularly those of class number one.

The mass of a quadratic form connects the class number (i.e. number of classes in the genus) of a quadratic form with the volume of its adelic stabilizer, and is explicitly computable in terms of special values of zeta functions. Comparing this with known results about the sizes of automorphism groups, and the geometry of the reduction domain for quadratic forms, one can make precise statements about the growth of the class number, and in principle determine those quadratic forms of small class number.

We describe some results over the rational numbers, and also over some small number fields. (Received August 13, 2008)