

# Publication List

Jonathan Hanke

## Publications

- On the cohomology of linear groups over imaginary quadratic fields,*  
(with H. Gangl, P.E. Gunnells, A. Schurmann, M.D. Sikirić, AND D. Yasaki)  
<http://arxiv.org/abs/1307.1165>, 22 pages.
- Algorithms for computing maximal lattices in bilinear (and quadratic) spaces over number fields,*  
<http://arxiv.org/abs/1208.2481>, 24 pages.
- Enumerating maximal definite quadratic forms of bounded class number over  $\mathbb{Z}$  in  $n \geq 3$  variables,*  
(submitted to Jour. of London Math. Soc.)  
<http://arxiv.org/abs/1110.1876>, 20 pages.
- Explicit formulas for masses of ternary quadratic lattices of varying determinant over number fields,*  
(submitted to Crelle)  
<http://arxiv.org/abs/1109.1054>, 27 pages.
- The structure of masses of rank  $n$  quadratic lattices of varying determinant over number fields,*  
(submitted to Duke Math. J.)  
<http://arxiv.org/abs/1108.3580>, 38 pages.
- Notes on "Quadratic Forms and Automorphic Forms" from 2009 Arizona Winter School,*  
(submitted to Arizona Winter School Conference Proceedings)  
<http://arxiv.org/abs/1105.5759>, 73 pages.
- A proof of the  $S$ -genus identities,* (with A. Berkovich and W. Jagy)  
(submitted to Special Volume of the Ramanujan Journal)  
<http://arxiv.org/abs/1010.1926>, 14 pages.
- Universal quadratic forms and the 290-theorem,* (with M. Bhargava)  
(accepted Invent. Math. in Sept. 2006)  
[http://www.jonhanke.com/?page\\_id=363](http://www.jonhanke.com/?page_id=363), 16 pages.
- An exact mass formula for quadratic forms over number fields,*  
J. Reine Angew. Math. **584** (2005), 1–27.
- Local densities and explicit bounds for representability by a quadratic form*  
Duke Math. J. **124** (2004), no. 2, 351–388.
- Some recent results about (ternary) quadratic forms,*  
*Number theory*, 147–164, CRM Proc. Lecture Notes 36, 2004.
- On a local-global principle for quadratic forms,*  
(unpublished preprint – 2003)
- On an exact mass formula of Shimura,* (with W.T. Gan and J. Yu),  
Duke Math. J. **107** (2001), no. 1, 103–133.

*An exact mass formula for quadratic forms over number fields,*  
Ph.D. Thesis, Princeton University, Spring 1999.

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*Probabilistic and Stochastic approaches to constant-weighted portfolios in an antisymmetric two stock market with continuous time,*  
(in progress)

*Average 2-torsion size in class groups of  $n$ -monogenic cubic fields,* (with M. Bhargava and A. Shankar)  
(in preparation)

*Enumerating maximal definite quadratic lattices of bounded class number over number fields,*  
(in preparation)

*Algorithms for computing a maximal lattice in quadratic spaces over number fields,*  
(in preparation)

## Software

*Quadratic Forms Library II for the SAGE computer algebra system,*  
[http://trac.sagemath.org/sage\\_trac/ticket/12229](http://trac.sagemath.org/sage_trac/ticket/12229)  
 $\approx$  11,500 lines of Python Code

*Quadratic Forms Library for the SAGE computer algebra system,*  
Tickets #4470, 5418, and 5954 at <http://trac.sagemath.org/>  
Released March 2009, distributed in SAGE versions  $\geq 3.4$ ,  
 $\approx$  22,000 lines of Python Code

*Theta function Eigenform Decompositions in MAGMA,*  
<http://code.google.com/p/theta-eigenform-decomposition--magma/>  
Released June 2011  
 $\approx$  1,500 lines of MAGMA Code

*Quadratic Forms Library in C++,*  
<http://code.google.com/p/qflib/>  
 $\geq$  20,000 lines of C++ Code

*BinaryQF Graphics Routines in SAGE,*  
[http://trac.sagemath.org/sage\\_trac/ticket/10867](http://trac.sagemath.org/sage_trac/ticket/10867)  
 $\approx$  300 lines of Python Code

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*ECLIB modifications to allow quadratic characters (joint with John Cremona),*  
<http://code.google.com/p/eclib-with-quadchar/>  
(in progress)

*Quadratic Forms Tables in SAGE,*  
(in preparation)