

Sage research coding projects

Number fields

Switch to flint (Sebastian's code) for absolute extension arithmetic

Switch to Singular for relative extension arithmetic

Function fields

Basic arithmetic

Hesse's algorithm

Fast arithmetic in various cases

Enough to finish the quartic torsion paper

Elliptic curves

Tamagawa numbers

Torsion

L function poly

Sha, when possible

Mordell-weil group via 2-descent

Modular abelian varieties

Atkin-Lehner operators on modabvars

Rational cuspidal subgroup

Weight >2 (modular motives)

Kernel of Eisenstein ideal

Maybe new torsion algorithm

Elliptic curves

Descent

3-descent to compute 3 selmer groups

4-descent to compute 4 selmer groups

Mod p reduction maps for E over a number field

Explicit map $E(K) \rightarrow E(K)/n$ for K finite or number field

Petersson inner product

Poincare series

L-functions

P-adic L-functions of abelian varieties

p-adic

P-adic L-functions attached to higher weight modular forms

Complex

Numerical computation of period lattices of modular forms

Dokchitser' method (finish and optimize Bradshaw's new implementation)

Numerical evaluation of modular forms (probably use Dokchitser, like what Jen started)

Classical half integral weight forms

Catalogue of interesting ones

Spaces of half integral weight forms as abstract objects

Dimension formulas

One associated to an elliptic curve

The Shimura lift

Fast level 1 classical forms (fix dog slow behavior of level 1 forms in Sage by using vm basis code)

More general method of graphs

Nonprime levels

General case working explicitly with elliptic curves

Modular forms over totally real fields

Quaternion algebras over totally real fields

Kolyvagin classes over totally real fields

Half integral weight forms

Group cohomology approach to totally real modular forms