

KASH: Recent Developments

KASH/KANT is a computer algebra system specialized for algebraic number theory and its applications. In recent years the computer algebra system KASH/KANT for number theory has evolved considerably. It contains the following system components:

- The KANT C library with highly specialized algorithms for number theory
- KASH, the KANT shell, and its programming language
- The graphical user interface GiANT
- The QaoS databases for algebraic objects with access via the worldwide web, or from computer algebra systems

The KANT library for number theory has been in development since 1987 under the leadership of Michael Pohst. In recent years we have redesigned key components of KASH. Our main purpose was to create a system that was easier to maintain and extend. To this end, we added a number of object-oriented features to KASH 3. With these new features, users can now write *generic functions* which can be used, for example, with global fields *and* number fields alike. To support generic functions we have introduced identifier overloading for function names and a new type system, which also allows for *user-defined types*. Documentation is written directly into the source code making documenting new functions simpler, and general maintenance easier. Similarly, the online help system and downloadable manuals are automatically generated from in-line comments in the source code.

We are going to introduce also the redesigned and expanded KANT database for number fields, QaoS and a newly developed graphical interface for working with number fields, GiANT.