

ICE Release Notes

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1 Version 0.1.0.1

1.1 New Features

- New option `-p`, `--pipes` to use stdin and stdout for communication, instead of files. Intended for integration with programs implementing Laporta's algorithm.
- New option `-v`, `--visualize` to draw simple bitmap images of the sparsity pattern of the system before and after stripping (and backsubstitution if performed). Note that since the images are not compressed, this option should only be used for moderate system sizes.
- New option `-f`, `--failbound` to require an upper bound on the probability of failure, which is reached by repeated runs of the algorithm.
- It is now possible for the same integral to appear multiple times in a single equation. The coefficients will be collected by Ice.
- Using machine size integers instead of 8-bit integers for integral indices, allowing a greater range. This makes it easier to use a custom ordering on the integrals without changes in the ICE source code: the

integrals just have to be numbered, using a single index, according to the preferred ordering.

1.2 Optimisations

- Changed the representation of the matrix during forward substitution to a trie that always has the next pivot row as its first element, and the rows that will be changed in the next pivot step in the first subtree. Searching for the next pivot row, and partitioning the rows is thus replaced by a (usually small) trie merge. This results in a huge performance boost.
- Some other minor optimisations (bulk evaluation of polynomials, tweaking of modular arithmetic).

1.3 Bugfixes with respect to previous release

None.

2 Version 0.1.0.0

First release.