A Formal Theory of RTL and Computer Arithmetic

`books/rtl/rel11/lib/`

Documentation: `www.russinoff.com/libman/`

- RTL: `basic`, `bits`, `log`
- FP Arithmetic: `float`, `reps`, `round`
- Specification of x86 FP Instructions: `excps`
- Implementation of Elementary Arithmetic Operations: `add`, `mult`, `div`, `srt`, `sqrt`
- Modeling Algorithms in SystemC: `masc`

Modeling Algorithms in SystemC

`books/projects/masc`

Documentation: `www.russinoff.com/libman/`

MASC: a simple language based on SystemC. A circuit design coded in MASC may be

- used as a guide for RTL development
- simulated
- subjected to high-level synthesis
- automatically translated to ACL2

Formal proof of IEEE-compliance is developed in parallel with RTL

MASC-RTL equivalence is formally checked with Synopsys's Hector

MASC Applications

- High-radix division/square root
- Vector compression
- Software FMA-based division
- FMA
- Elliptic curve encryption