

Arbitrary precision ball arithmetic

Project description

The project consists of implementing and optimizing some operations in the midpoint-radius representation of interval arithmetic, i.e. ball arithmetic.

Operations to implement:

- Addition
- Multiplication
- Division

You can be creative and go further in different directions. For example:

- Specialize for some fixed precision (e.g. using quad-double precision).
- Try different multiplication algorithms.
- Implement other interesting operations/functions.

Readings:

Introduction and some basic operations: <https://www.texmacs.org/joris/ball/ball.html>

A library implementing ball arithmetic: <https://arxiv.org/abs/1611.02831>