

#### Changes for 2.2.18

- Updated with changes for Intel compiler v15-16.

#### Changes for 2.2.17

- Added an input parameter mpstrlen to mp\_inp.f.

#### Changes for 2.2.15

- Fixed intermittent memory problem in dotd.cpp.

#### Changes for 2.2.6

- Fixed F-format bug in Fortran file mp\_mod.f.
- Fixed mpread bug in Fortran file mp\_modx.f

#### Changes for 2.2.2

- Clean up mp\_mod.f, added mpeq\_xz (assignment to complex) and cmplx (creation of mp\_complex).
- Fix dble to be more accurate, and avoid spurious underflow.
- Make C++ I/O of mp\_real closer to standard C++ I/O.
- Added to\_string function.

#### Changes for 2.2.1

- Some bug fixes for Cygwin environment.

#### Changes for 2.2.0

This is a major update to ARPREC, there are several API incompatibilities.

- Moved C++ main entry in libqdmmod.a to libarprec\_f\_main.a. This allows to link Fortran code using ARPREC with custom C++ main function. Pure Fortran code will need to be linked with arprec\_f\_main library in addition to arprecmod and arprec library.
- Constructor taking integers now just initializes the data. For example "x = mp\_real(35)" now initializes x to 35, instead of creating an mp\_real with 35 words. To get the old behaviour, do something like mp\_real(0.0, 35).
- String output routines write and to\_string routines now takes a single fmtflags.
- Members are now all public, making it a plain-old-data type.
- Removed mpr\_location, set/getData accessors.
- mp\_real(double \*) constructors are now explicit.
- Renamed several static variables in class mp to more descriptive names.
- Various constants are now in mp\_real class (mp\_real::\_pi, \_log2, \_log10, and \_eps).

#### Changes for 2.1.104

- Fixed bug in division and increments for mp\_int.
- Output correct number of digits in c\_mpwrite / c\_mpout.
- Fixed compilation errors and warnings.

#### Changes for 2.1.103

- Minor changes to accomodate Windows build.

#### Changes for 2.1.102

- Ignore CC compiler on Apple systems.
- Fix C++ pslq demos to print out integers when appropriate.
- Fix dependency of Fortran modules to allow parallel make.
- Fix bug in mp\_real::mpnorm that was accessing past end of an array.

#### Changes for 2.1.101

- Added third display option in math toolkit.
- Bug fix in math toolkit.

#### Changes for 2.1.100

- Added fortran/Makefile.sample, a sample Makefile for using ARPREC library with Fortran programs.
- Fixed bug in arprec-config where --fcflags had an extra @.

#### Changes for 2.1.99

- Added read\_binary and write\_binary for binary I/O.
- Fixed bug where decimal point and minus sign was not printed correctly in certain cases.
- General improvements in I/O routines, including adjustable exponent width and column width.
- Added mp\_real constructor accepting std::string.
- Perform some I/O tests during "make check".

#### Changes for 2.2.3

- Removed dynamic precision from quadgs routine of Fortran and C++ versions of the Gaussian quadrature demonstration program.
- Fixed some bugs in the erf and erfc routines.