

# The PowerPC Numerics C Implementation

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This part describes the PowerPC Numerics implementation for the C programming language. The numeric implementation for the C language conforms to both IEEE standard 754, referred to in this book as *the IEEE standard*, and the recommendations in the FPCE technical report. As stated in Part 1, the FPCE report proposes a standard way of doing floating-point arithmetic for the C programming language. The IEEE standard specifies a standard for floating-point arithmetic for all computers regardless of the architecture or of any high-level language. The FPCE recommendations conform to the IEEE standard and standardize its implementation for the C programming language, so that if you write a program that uses FPCE features, it will compile with any FPCE-compliant compiler.

PowerPC Numerics in C is supported largely through a library called MathLib. This library contains macros, functions, and type definitions that provide conformance to the IEEE standard and the FPCE technical report. Some of the functions in the PowerPC Numerics library have two implementations: double precision and double-double precision. The double-double-precision implementation has the letter *l* appended to the name of the function and performs exactly the same as the double version. This book uses the double-precision implementation's name to mean both of these implementations.

This part describes the MathLib PowerPC Numerics library, its adherence to each piece of the PowerPC Numerics environment, and its additional features that conform to the FPCE technical report. For more information about the semantics of PowerPC Numerics, see Part 1. Read Part 2 if you are a programmer and you want to find out how to access the features described in Part 1 using the C language. You might also find Appendixes C, D, and E (in the back of this book) useful as reference material.

