MathLibMoto v1.0.1 Project
Requires PowerPC Macintosh and System 7.5 or later.

The enclosed project and source files can be compiled with Code Warrior 8 to produce MathLibMoto. It requires libmoto which is part of the Motorola PowerPC C/C++ SDK. The libmoto library is copyright by Motorola and may not be distributed without a license from Motorola.

MathLibMoto is a shared library designed to accelerate MacOS math functions. To use this library, simply drag it into the same folder as the application you wish to accelerate or drag it into the System:Extensions folder to accelerate all applications. It is not necessary to restart your Macintosh after installing the library. If you see a file named "MathLib" in your Extensions folder, remove it before installing MathLibMoto. You should keep a copy of the original MathLib in case you need to replace it later if you discover any problems with MathLibMoto.

MathLibMoto is built with the libmoto library which is part of the Motorola C/C++ SDK. It includes pow, sqrt, sin, cos, log, log10, exp, atan and atan2. The functions tan, asin, acos, sinh, cosh, and tanh are derrived from the other functions and are included as part of MathLibMoto.

If you are a Macintosh application developer, you can get the best performance by linking directly with libmoto. libmoto also includes several string and memory utility functions which can help your application's performance. The Motoroloa C/C++ compilers offer excellent code optimization. I highly recommend the Motorola C/C++ SDK to any programmer interested in maximizing their application's PowerPC performance. I really wish that Apple would include the functions in libmoto in future versions of their math library. Hopefully, MathLibMoto with become obsolete in the near future.

The program MathTest compares the performance of each math function. The program performs one million iterations for each function with a constant test value. Different test values will produce different performance. All of the functions in the Motorola library appear to produce results identical to those in the Apple math library. The functions tan, acos, sinh, cosh and tanh were derrived from the Motorola

functions and may produce different results (in this test, tan, sinh and tanh produced different results). The difference in results are extremely small and should not cause any serious math errors (the results appear to have at least 16 digits of accuracy).

This library was created by Mark Granger. This is not an Electric Image, Inc. product. This library is provided without any warranty. The MathLibMoto project and source may be copied freely so long as this text file is included with it. Use this library at your own risk. It has not been tested for compatibility with other Macintosh applications. It has also only had very limited testing for correctness. Do not use this library with any mission critical application.

Below are the results of running the MathTest program with the Apple math library and then with the MathLibMoto library on a Macintosh 8100/80. All times are in seconds. The result = x field gives the function result and is used for checking accuracy. Note that pow is more than three times faster in MathLibMoto than in the Apple math library. Several of the other functions are twice as fast and all go faster to some degree. Try running MathTest on your own computer. Drag MathLibMoto into and out of the same folder as MathTest to compare speed difference MathLibMoto makes compared to the Apple math library.

Apple's Math Library:

```
pow   = 7.233333   result = 1.6392961767304339293
sqrt  = 1.866667   result = 11.1110755554986671001
sin   = 2.216667   result = -0.8039373685728268271
cos   = 1.783333   result = -0.5947139710921535150
tan   = 4.216667   result = 1.3518050821917770854
log   = 2.916667   result = 4.8158848172832637857
log10 = 2.933333   result = 2.0915122016277716277
exp   = 1.866667   result = 1.1314002218371064235
asin  = 5.200000   result = 0.1237717773443353098
acos  = 6.800000   result = 1.4470245494505613593
atan  = 2.383333   result = 1.5626964520979926832
atan2 = 5.200000   result = 0.1973955598498807751
sinh  = 4.550000   result = 0.1237698457926306866
cosh  = 2.900000   result = 1.0076303760444758062
tanh  = 4.116667   result = 0.1228325869635827766
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MathLibMoto:

pow   = 2.083333   result = 1.6392961767304339293
sqrt  = 1.300000   result = 11.1110755554986671001
sin   = 1.033333   result = -0.8039373685728268271
cos   = 0.966667   result = -0.5947139710921535150
tan   = 2.583333   result = 1.3518050821917773074
log   = 1.033333   result = 4.8158848172832637857
log10 = 1.116667   result = 2.0915122016277716277
exp   = 1.166667   result = 1.1314002218371064235
asin  = 2.916667   result = 0.1237717773443353098
acos  = 2.966667   result = 1.4470245494505613593
atan  = 1.183333   result = 1.5626964520979926832
atan2 = 1.766667   result = 0.19739555984988077 51
sinh  = 2.600000   result = 0.1237698457926306728
cosh  = 2.583333   result = 1.0076303760444758062
tanh  = 2.800000   result = 0.1228325869635827627

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