

Parallel Performance of the IMSL C Numerical Library

Benchmarking OpenMP

Abstract

The use of OpenMP directives within the IMSL C Numerical Library is an effective means of achieving scalable parallelism in a portable fashion across a wide variety of computing platforms. While other technologies exist for SMP parallelization, OpenMP is a stable, well-known and mature choice with broad platform support, which is a key for the IMSL C Numerical Library. Some functions show very good, nearly linear, scaling up to 8 threads, which is quite good considering the algorithms were not re-written, but rather just had OpenMP directives added in strategic places.

This paper discusses a wide range of algorithms parallelized in IMSL C Numerical Library version 7.0, but this is not an exhaustive list; please refer to the product documentation for a complete list. Finally, Visual Numerics has performed these benchmarks on standard systems using the publically available version of the software, and while we expect you should get similar results, it is always best to evaluate the algorithms you use on your deployment hardware for truly accurate results.