9. Vectorization of multiple-precision arithmetic program and 201,326,000 decimal digits of pi calculation (1988)


Synopsis:
In this paper, Yasumasa Kanada describes the computation of \( \pi \) to over 200 million decimal digits on a Hitachi S-820 vector supercomputer in Japan. Kanada employed what he termed the Gauss-Legendre formula, which is very similar to the formulas found by Salamin and Brent, and, for a check, by using Borwein quartic algorithm (the same algorithm earlier employed by Bailey).

Kanada provides very detailed information on exactly how he implemented these formulas, how he performed high-precision multiplication using a fast Fourier transform, and, how he accelerated his code to run at the maximum possible performance on the Hitachi supercomputer. Kanada also provides an interesting statistical analysis on these 200 million digits.

Keywords: Computation, Normality