PERFORMANCE ANALYSIS AND OPTIMIZATION OF NUMERICALLY INTENSIVE PROGRAMS
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Abstract. In this paper we explore the characteristics of numerically intensive programs and explore their efficient implementation on a variety of machine architectures. It is demonstrated that different architectures need different optimization techniques. The emphasis of the paper is on modern RISC-CPPUs on the one side and advanced, recursive algorithms on the other side.

Key words. Numerically intensive computing, supercomputing, performance measurement, optimizing compilers, basic linear algebra operations, recursion, matrix multiplication, high dimensional numerical quadrature.