



EINLADUNG

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ZIH - KOLLOQUIUM

Title: **Automated Tuning of Scientific Applications**

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Abstract:

Current empirical optimization implementations such as ATLAS and FFTW can achieve good performance because the algorithms to be optimized are known ahead of time. We are addressing this limitation by extending the techniques used in ATLAS to the optimization of arbitrary code. Since the algorithm to be optimized is not known in advance, compiler technology is required to analyze the source code and generate the candidate implementations. The ROSE project from Lawrence Livermore National Laboratory provides a source-to-source code transformation tool that can produce blocked and unrolled versions of the input code. Combined with our search heuristics we can use ROSE to perform empirical code optimization. Model-guided empirical optimization combines static models of architecture and profitability with empirical search. Another automated technique involves feedback-directed scheduling of threads for efficient cache usage on multicore architectures. This talk will explain the above techniques as well as illustrate their use in improving application performance by up to 40 to 50 percent.

gez. Prof. Dr. Wolfgang E. Nagel