

## E i n l a d u n g

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## **Z H R - K o l l o q u i u m**

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**Titel:** Java for High Performance Computation: Prospects and Problems

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### **Abstract:**

Java has originally not been designed for high performance computation. However, it has attracted a lot of attention in the scientific community. It has spawned research on various aspects of the Java language, its implementation and its performance.

In the presentation, we discuss a number of approaches to make Java suitable for scientific computation as well as a number of problems that still have to be solved. The approaches vary in their "intrusiveness" with respect to the current Java language definition.

Apart from the above, the performance issue is a dominant factor in the success or failure of Java for high performance computation. Just-in-time (JIT) compilers have improved

Java performance quite a lot, but do not give a definite answer whether or not this will be sufficient to solve the performance problem.

At the Delft University of Technology, we have developed a language and compiler for Spar/Java. Spar/Java is an example of a language for the development of high-performance software for traditional parallel computers and for high-performance embedded systems. Traditional parallel computers use only one type of processor, but high-performance embedded systems are often heterogeneous, because they contain both general-purpose processors and digital signal processors (DSP's), sometimes even various types of DSP's.

The language SPAR/Java has been designed to enable task and data placement on high performance systems. This placement can be done automatically or under user guidance. For the latter a flexible annotation language has been developed. In the talk, the language and compilation system will be discussed and results will be presented.

**Ort:** Willers-Bau C207  
**Zeit:** Montag, den 25. November 2002, 15.00 Uhr

**gez. Prof. Dr. W.E. Nagel**

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