

High-PACE: A high performance acoustics computing environment – Brian C. Tuttle, Victor W. Sparrow, and Brian H. Dennis

In physical acoustics it is now possible to solve some large problems via direct simulation on parallel computers due to the emergence of relatively inexpensive Beowulf class clusters of commodity personal computers. In this brief talk, an overview of the performance characteristics and initial calculation results from such a cluster will be provided. Called High-PACE, for high performance acoustics computing environment, the new machine has 32 Pentium III processors at 450 MHz, 8.5 GB of RAM, over 200 GB of disk storage, and is interconnected by a Myrinet (Myricom, Arcadia, CA) 1.28 gigabit/s interface. The machine uses the Linux operating system and is programmed with FORTRAN 90 and the message passing interface, MPI. Initial work is focused on a deep understanding of nonlinear acoustic streaming for thermoacoustics applications. [Work supported by ONR.]

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