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**Parallel computing with load balancing on heterogeneous distributed systems.** (English)

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Summary: In the present work, the parallelization of the solution of a system of linear equations, in the framework of finite element computational analyses, is dealt with. As the substructuring method is used, the basic idea refers to a way of decomposing the considered spatial domain, discretized by the finite elements, into a finite set of non-overlapping subdomains, each assigned to an individual processor and computationally analysed in parallel. Considering the fact that Personal Computers and Work Stations are still the most frequently used computers, a parallel computational platform can be built by connecting the available computers into a computer network. The incorporated computers being usually of different computational power and memory size, the efficiency of parallel computations on such a heterogeneous distributed system depends mainly on proper load balance. To cope the balance problem, an algorithm for the efficient load balance for structured and free 2D quadrilateral finite element meshes based on the rearrangement of elements among respective sub-domains, has been developed.

**MSC:**

68M14 Distributed systems

68Q10 Modes of computation (nondeterministic, parallel, interactive, probabilistic, etc.)

68M20 Performance evaluation, queueing, and scheduling in the context of computer systems

Cited in **3** Documents

**Keywords:**

Parallel computing; Heterogeneous computer system; Load balancing

**Software:**

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