

Introduction to parallel computing using the MPI technology

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Lectures: Parallel computing & MPI

- Parallelism in the architecture of computing systems
- Introducing to MPI
 - Basic MPI concepts. SPMD - paradigm.
 - Basic MPI procedures.
 - "Point-to-point" MPI operations.
 - Collective MPI operations.
 - How to use MPI on the Linux-cluster.
- Examples of parallel implementation of particular algorithms and numerical study of physical problems

Practice.

Learning and application of the MPI technology to the numerical study of computational physics problems with the use of multi-processor systems MPI is one of the basic technologies in parallel programming which is a subroutine library (for FORTRAN) or functions (for C) to provide data exchange between parallel processes that solve a common problem.

Within the practical work we expect to get acquainted with the main possibilities of this technology, its practical use for paralleling test examples, practical skills of using MPI for specific problems of computational physics.

References:

1. MPI: The complete Reference. MIT Press, Cambridge, Massachusetts, 1997.
2. В.В.Воеводин, Вл.В.Воеводин "Параллельные вычисления", БХВ-Петербург, 2002.
3. <http://parallel.ru/>