Parallization

P. Höflich

Dept. of Astronomy, University of Texas at Austin

Parallel computing has turned out as a enabling technology to solve complex physical systems. However, the transition from shared memory, vector computers to massively parallel, distributed memory systems and, recently, to hybrid systems poses new challenges to the scientist. We want to present a cook-book (with a very strong, personal bias) based on our experience with parallization of our code. Some of the general tools and communication libraries are discussed. Our approach includes a mixture of algorithm based, grid based and physical module based parallelization. The advantages, scalability and limitations of each are discussed at example calculations for supernovae. We hope to show that effective parallelization becomes easier with increasing complexity of the physical problem making stellar atmosphere beyond the classical assumptions very suitable.