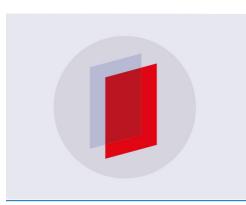**PAPER • OPEN ACCESS**

Workshop on Numerical Modeling in MHD and Plasma Physics: methods, tools, and outcomes. Honor of academician Anatoly Alekseev's 90th Birthday

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Preface

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Over the years, the work on projects of controlled thermonuclear fusion has been progressing. The ultimate purpose is the implementation of a thermonuclear reactor, which will become an ecologically conscious way of solving the energy problem of mankind. A large number of particle accelerators and colliders have been developed and constructed. The natural processes taking place in supernovae, interstellar medium, and galaxies are the main incentive in thermonuclear fusion. A workshop on numerical modeling in MHD and plasma physics is organized in the era of «big data». Observations with telescopes such as ALMA and results of experiments on colliders such as LHC generate huge sets of data. It is necessary not only to process the data, but also to explain the underlying physical processes with comparable quality. The problem of modeling the plasma in cosmos and laboratory is many-sided. For modeling it is necessary to create computational algorithms based on co-design, simulation study, and assessment of the energy efficiency, which satisfy simultaneously the conditions of high computational accuracy, scalability, and efficiency. The main goal of the workshop is a close and intensive interaction of specialists in the field of numerical methods and parallel computations. The workshop will allow us to formulate current and future requirements for computational models and discuss applications of numerical methods to the problems of plasma physics and astrophysics.