

## **Background Information**

**Today**, fundamental research, as carried out not only in mathematics but also in materials sciences, engineering, chemistry, geosciences, and molecular biosciences, is of topical interest. The International Energy Agency has pointed out the imbalance between funding of long term and applied research at levels of cooperation. To address this problem, Germany together with the IEA's Ad-hoc Group on Science and Energy Technology (AHGSET) has initiated the present international workshop on computational issues in energy research.

**Based** on modelling work carried out in the various collaboration projects of the IEA and selected national R&D activities, results, options, but also problems and limits of present computational work will be presented. In addition aspects of relevant advanced mathematics will be described.

### ***Perspectives and targets***

- To show topics of current modelling activities in the various fields of energy research and development
- To bring divergent scientific and engineer communities together and to improve integration of scientific knowledge into technological innovation
- To provide analyses for future research and development activities and consider issues for possible cooperation
- To contribute to priority setting in energy R&D

### **AHGSET's mission**

The Ad-Hoc Group on Science and Energy Technologies was set-up by a number of IEA member states to strengthen the connections between basic science and applied energy programs, accelerating the development of major technological advances and revolutionary concepts and systems to meet our energy challenges.

### **The German energy R&D programme**

Research and development policy is striving to enable the energy system to react to all future eventualities while maintaining the current technical quality and standards of supply. Energy R&D is varied and consists of a large number of individual activities which serve the requirements of industry as well as encouraging scientific creativity and innovation.

Efficiency both in the conversion and end use of energy is the main priority of the non-nuclear energy policy of the Federal Ministry of Economics and Labour. However, in addition to fusion energy research, a recent programme with the objective to make a link between basic science and energy research by creating multidisciplinary networks of scientists comes under the responsibility of the Federal Ministry of Research and Education. PTJ, as project management organisation, supports both ministries in the preparation, and implementation of programmes providing financial support for research.

### **The Weierstrass Institute**

has a long standing tradition of investigating different mathematical questions (analysis, numerical stability, algorithms etc.) in the context of one real world application. Serious contributions have been made in areas like geothermal convection, fuel cells, semiconductor technology, crystal growth, which are governed by reaction-diffusion-convection equations.