

Special Session

on

SOLVING LARGE ENGINEERING AND SCIENTIFIC PROBLEMS WITH ADVANCED MATHEMATICAL MODELS

ABSTRACT

The problems that are to be treated by using mathematical models are becoming greater and greater, because more and more sophisticated mechanisms for the description of the underlying physical and chemical process are developed and implemented in them. This leads to the solution of huge computational tasks that can be handled on the existing at present computers only if the following four conditions are satisfied:

- (a) efficient numerical methods are selected,
- (b) parallel techniques are implied,
- (c) splitting procedures are applied in order to exploit better the specific properties of the different operators involved in the models and
- (d) the cache memories of the modern computer architectures are skilfully taken into account during the preparation of the codes.

Papers from different areas of science and engineering, including here different important and complex problems that are related to climate changes and air pollution studies, are welcome. Both the efficient solution of the four important tasks and the description of results obtained in different applications are of interest for this special session.