

Applications of Numerical Analysis

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Numerical analysis concerns with the development and study of methods/algorithms for solving mathematical problems. First, a mathematical model is formulated for an observed phenomenon in biology, chemistry, physics, economics or any other scientific or engineering discipline. In practice most of these mathematical models are difficult or impossible to solve analytically. In order to solve such a model approximately on a computer, the problem is approximated by a discrete one. Numerical analysis designs the methods and algorithms which approximately solve the mathematical problem efficiently, accurately and reliably.

In this talk, we shall illustrate the need and the use of the general ideas behind numerical methods giving some examples from physical situations. Recent applications are shown from magnetohydrodynamic duct flows.

Keywords. Numerical analysis, MHD, duct flow.