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The range of theoretical fluid-mechanics problems treated here is unique in its kind

The lectures are updated versions of contemporary knowledge in the field

It is an outstanding introduction to research on fluids for young scientists

This volume brings together five contributions to mathematical fluid mechanics, a classical but still very active research field which overlaps with physics and engineering. The contributions cover not only the classical Navier-Stokes equations for an incompressible Newtonian fluid, but also generalized Newtonian fluids, fluids interacting with particles and with solids, and stochastic models. The questions addressed in the lectures range from the basic problems of existence of weak and more regular solutions, the local regularity theory and analysis of potential singularities, qualitative and quantitative results about the behavior in special cases, asymptotic behavior, statistical properties and ergodicity.

Content Level » Research

Keywords » 76-02, 76D05, 35Q30, 35Q35, 76N10, 60H15, 35R60 - Fluid-mechanics - Partial Differential Equations - Stochastic Partial Differential Equations

Related subjects » Classical Continuum Physics - Dynamical Systems & Differential Equations - Mechanics

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