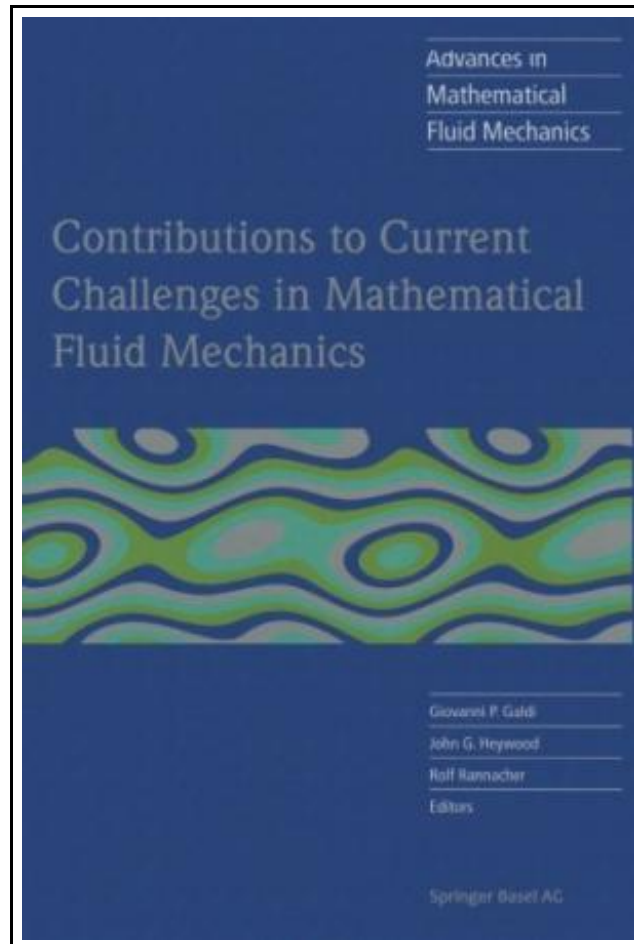


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Book Condition: New. Publisher/Verlag: Springer, Basel | This volume consists of five research articles, each dedicated to a significant topic in the mathematical theory of the Navier-Stokes equations, for compressible and incompressible fluids, and to related questions. All results given here are new and represent a noticeable contribution to the subject. One of the most famous predictions of the Kolmogorov theory of turbulence is the so-called Kolmogorov-obukhov five-thirds law. As is known, this law is heuristic and, to date, there is no rigorous justification. The article of A. Biryuk deals with the Cauchy problem for a multi-dimensional Burgers equation with periodic boundary conditions. Estimates in suitable norms for the corresponding solutions are derived for "large" Reynolds numbers, and their relation with the Kolmogorov-Obukhov law are discussed. Similar estimates are also obtained for the Navier-Stokes equation. In the late sixties J. L. Lions introduced a "perturbation" of the Navier Stokes equations in which he added in the linear momentum equation the hyper dissipative term  $(-Ll)Bu, f_3 \sim 5/4$ , where  $Ll$  is the Laplace operator. This term is referred to as an "artificial" viscosity. Even though it is not physically motivated, artificial viscosity has proved a useful device in numerical simulations of the Navier-Stokes equations at high Reynolds numbers. The paper of D. Chae and J. Lee investigates the global well-posedness of a modification of the Navier Stokes equation similar to that introduced by Lions, but where now the original dissipative term  $-Llu$  is replaced by  $(-Ll)O:u, 0 \leq Ct \leq 5/4$ . | On Multidimensional Burgers Type Equations with Small Viscosity.- 1. Introduction.- 2. Upper estimates.- 3. Lower estimates.- 4. Fourier coefficients.- 5. Low bounds for spatial derivatives of solutions of the Navier-Stokes system.- References.- On the Global Well-posedness and Stability of the Navier-Stokes and the Related Equations.- 1. Introduction.- 2....



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