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Nota di contenuto	The Work of Yoshihiro Shibata, Herbert Amann, Yoshikazu Giga, Hisashi Okamoto, Hideo Kozono and Masao Yamazaki -- Existence of weak solutions for a diffuse interface model of power-law type two-phase flows, Helmut Abels, Lars Diening and Yutaka Terasawa -- Stationary Solutions for a Navier-Stokes/Cahn- Hilliard System with Singular Free Energies, Helmut Abels and Josef Weber -- Parabolic Equations on Uniformly Regular Riemannian Manifolds and Degenerate Initial Boundary Value Problems, Herbert Amann -- A generalization of some regularity criteria to the Navier–Stokes equations involving one velocity component, Simon Axmann and Milan Pokorny -- On the singular p-Laplacian system under Navier slip type boundary conditions, The gradient-symmetric case, H. Beirão da Veiga -- Thermodynamically consistent modeling for dissolution/growth of bubbles in an incompressible solvent, Dieter Bothe and Kohei Soga -- On unsteady internal flows of Bingham fluids subject to threshold slip on the impermeable boundary, Miroslav Bulíek and Josef Málek -- Inhomogeneous boundary value problems in spaces of higher regularity, Robert Denk and Tim Seger -- Blow-up criterion for 3D Navier-Stokes equations and Landau-Lifshitz System in a bounded domain, Jishan Fan and Tohru Ozawa -- Local Regularity Results for the Instationary Navier-Stokes Equations Based on Besov Space Type Criteria, Reinhard Farwig -- On global well/ill-posedness of the Euler-

Poisson system, Eduard Feireisl -- On the Motion of a Liquid-Filled Rigid Body Subject to a Time-Periodic Torque, Giovanni P. Galdi, Giusy Mazzone and Mahdi Mohebbi -- Seeking a proof of Xie's inequality: on the conjecture that $m \neq 1$, John G. Heywood -- Bounded Analyticity of the Stokes Semigroup on Spaces of Bounded Functions, Matthias Hieber and Paolo Maremonti -- On the weak solution of the fluid-structure interaction problem for sheardependent fluids, Anna Hundertmark, Mária Lukáková-Medvid'ová and Sárka Neasová -- Stability of time periodic solutions for the rotating Navier-Stokes equations, Tsukasa Iwabuchi, Alex Mahalov and Ryo Takada -- Weighted $L_p - L_q$ estimates of Stokes semigroup in half-space and its application to the Navier-Stokes equations, Takayuki Kobayashi and Takayuki Kubo -- On vorticity formulation for viscous incompressible flows in \mathbb{R}^3_+ , Humiya Kosaka and Yasunori Maekawa -- A Weak Solution to the Navier–Stokes System with Navier’s Boundary Condition in a Time–Varying Domain, Jif Neustupa and Patrick Penel -- Effects of fluid-boundary interaction on the stability of boundary layers in plasma physics, Masashi Ohnawa -- On Incompressible Two-Phase Flows with Phase Transitions and Variable Surface Tension, Masao Yamazaki.

Sommario/riassunto

The book addresses recent developments of the mathematical research on the Navier-Stokes and Euler equations as well as on related problems. In particular, there are covered: 1) existence, uniqueness, and the regularity of weak solutions; 2) stability of the motion in rest and the asymptotic behavior of solutions; 3) singularity and blow-up of weak and strong solutions; 4) vorticity and energy conservation; 5) motions of rotating fluids, or of fluids surrounding a rotating body; 6) free boundary problems; 7) maximal regularity theory and other abstract results for mathematical fluid mechanics. For this quarter century, these topics have been playing a central role in both pure and applied mathematics and having a great influence to the development of the functional analysis, harmonic analysis and numerical analysis whose tools make a substantial contribution to the investigation of nonlinear partial differential equations, particularly the Navier-Stokes and the Euler equations. There are 24 articles in this book in which the nonlinear PDE arising in the fluid mechanics are mainly discussed. The authors consist of speakers and participants of the "International Conference on the Mathematical Fluid Dynamics" on the occasion of Professor Yoshihiro Shibatas 60th birthday held on March 5--9 in 2013 at old capital city Nara, Japan.
