Keiichi Watanabe Activity Report AY2020

Research summary

1. I proved the local well-posedness of the moving contact line problem of the Navier-Stokes equations with 90-degrees boundary contact.
2. I studied the stationary problem corresponding to the free boundary problem of the Navier-Stokes equations. I also proved the stability of the stationary solutions.

Published papers

1. (with P. Tolksdorf) The Navier–Stokes equations in exterior Lipschitz domains: Lp-theory, *J. Differential Equations* **269** (2020), no. 7, 5765–5801.
2. Global solvability of compressible–incompressible two-phase flows with phase transitions in bounded domains, *Mathematics* **9** (2021), no. 3, 258.

Workshop Talks

1. (in Japanese) The moving contact line problem in cylindrical domains, 京都大学 NLPDE セミナー (オンライン開催), Nov. 13, 2020.
2. On the moving contact line problem in cylindrical domains, International Workshop on the Multi-Phase Flow; Analysis, Modeling, and Numerics, Waseda Univ., Online, Dec. 02, 2020.
3. (in Japanese) On the equilibrium figures of the uniformly rotating liquid, 第 14 回若手のための偏微分方程式と数学解析, online, Feb. 19, 2021.

Organizer

1. Lecture series on Mathematical Fluid Dynamics in Waseda, "Maximal Regularity Theorem and Mathematical Fluid Dynamics" Waseda University, online, Mar. 9–12, 2021.
2. International Workshop on Multi-Phase Flows: Analysis, Modelling and Numerics, Waseda University, Dec. 1–4, 2020.

Grants

1. JSPS Grant-in-aid for Research Activity Start-up, Grant number 20K22311, Sep. 2020 – Mar. 2022, "Mathematical analysis of incompressible viscous fluids with contact angles", 2,860,000 JPY.