Business Trip Report

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1.   Abstracts

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Destinations: The 12th AIMS Conference on Dynamical Systems,

Differential Equations and Applications

National Taiwan University, Taipei, Taiwan

Period: July 5-9, 2018

Summary: I visited National Taiwan University, Taiwan and participated in the

12th AIMS conference. I gave two invited speeches on my recent

research. At the banquet, I had a chance to get knowing with the

finalists of the student paper competition.

2.   Research Activities

I am concerned with the complex Ginzburg-Landau (CGL) equations, which are introduced by V. Ginzburg and L. Landau in 1950 as a mathematical model of superconductivities. The CGL equations are regarded as the nonlinear heat (or Schrödinger) equations of power type nonlinearities with complex coefficients and with linear term. Based on the theory of nonlinear parabolic equations, different features appear on CGL equations in accordance with the sign of the real part for the nonlinear part – dissipative and blow-up case.

Recently, I proved together with Professor Ôtani two existence results of solutions for CGL equations in possibly unbounded general domains: global existence of solutions for CGL equations with p-Laplace operators in dissipative case; local well-posedness of solutions in blow-up case.

In the conference, I presented the former result in Special Session 29. After my presentation, I received some important suggestion for further research. In this session, Professor Ishiwata and Professor Wadade respectively talked about the variational method and the profile decomposition technique, which seemed to be interesting topics. They kindly told me the detail of these topics after their presentations.

Moreover, I was selected as one of the finalists for Student Paper Competition and

made a speech concerning the latter result in the competition. To my regret, I failed to be nominated for awards. However, as I participated in the conference as a student, it was a great opportunity to hear presentations given not only by researchers in ordinary sessions but also by outstanding students nominated as finalists of the competition. I was very inspired by their research, for they deal with mathematics, numerical analysis and applications to physical and engineering models.

3.   Comments

This trip opened my eyes to how important it is to apply theoretical mathematics to numerical analysis. In addition, it is necessary to get connected to researchers as well as students abroad. Only when we are students, we would talk frankly with other students about more than mathematics. Thus, the great opportunity it is and would be to be participated in conferences held abroad or to study abroad.

4.   Conclusions

In this trip, I could enjoy an opportunity to make speeches of our recent research, to listen fascinating talks and to contact many eminent researchers and students abroad. This activity is supported by Mathematics and Physics Unit "Multiscale Analysis, Modelling and Simulation", Top Global University Project, Waseda University.

Lastly, I would like to express my great appreciation for clerical work and financial support, with which I could participate in the conference, to Ms. Ikezaki, Ms. Nakao and Professor Shibata.