

# ABEL VISITING SCHOLAR PROGRAM

## Robustness in Nonsmooth Nearly Convex Optimization Problems, Vietnam, Germany



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Host Professor: **Prof. Christiane Tammer**, Martin-Luther-University Halle-Wittenberg, Germany

### CONTEXT

In Vietnam, there is a strong math tradition with growing research, but it is unevenly distributed across the country. A major challenge is the significant lack of funding for international collaboration, especially the limited access to a global network for young researchers. The Abel Visiting Scholar program is vital for capacity building, helping to bridge the gap between local talents and the global mathematical community. Most importantly, it allows young scholars to participate in essential knowledge transfer and international networking.

### CDC SUPPORTED ACTIVITY

Between November 21 and December 20, 2024, I visited the Martin Luther University Halle-Wittenberg in Germany, collaborating with Professor Christiane Tammer on Robustness in Nonsmooth Nearly Convex Optimization, a critical field for solving mathematical problems involving data uncertainty. During this period, we focused on studying optimality conditions under uncertain environments and calculating subdifferentials for maximum nearly convex functions. Beyond the specific findings, the visit also supported our Ph.D. training efforts and created a good foundation for future joint projects.

### IMPACT

Through the Abel Visiting Scholar program, I have improved my knowledge in Robust Optimization and Nonsmooth Analysis. I developed these skills by working directly with experts and faculty at the host university, where we exchanged ideas and discussed new research methods. For a young researcher like me, this program is very important because it provides a great chance to join the global mathematical network, which is often hard to access from Vietnam. These experiences have helped me a lot in my personal career and allowed me to provide better guidance for MSc. Vu Hong Quan's Ph.D. dissertation. By bringing back modern techniques, I can share what I learned with my colleagues and students at home. This not only helps my home institution grow but also bridges the gap between local talent and the international community. Overall, the program has been a vital step in my development as a mathematician and has brought many benefits to my academic environment.

### OUTCOMES AND ACHIEVEMENTS

This academic visit provided essential support for the Ph.D. dissertation of my student, MSc. Vu Hong Quan, whom I have supervised closely throughout this project. Our teamwork during this time led to the research paper titled 'Nonsmooth Nearly Convex Optimization Problems and Applications in Robustness,' authored by Vu Hong Quan, Duong Thi Viet An, and Christiane Tammer, which has been accepted for publication in the Journal of Nonlinear and Variational Analysis in 2026. Beyond these results, the visit helped us start new research directions focused on robustness under uncertainty, creating a strong base for future collaboration. Overall, this experience has not only improved our current research but also opened up new opportunities for scientific discovery and career growth for both my student and myself.



### REFLECTIONS

This research visit played a strong role in my own growth, giving me deeper research skills, wider international exposure, and clearer direction for my future work. My time at Martin-Luther-University Halle-Wittenberg strengthened my confidence in guiding young Ph.D. students in Robust Optimization. The published paper in the Journal of Nonlinear and Variational Analysis shows that regional research can reach global standards, opening new paths for both my career and the development of young mathematicians in our region. By connecting local researchers with global experts, this activity helps build mathematical capacity in emerging countries like Vietnam.

This activity was supported by the International Mathematical Union Commission for Developing Countries and the Abel Board.