

Quan Ba Hong NGUYEN

Motivation Letter

31 Avenue Charles FOULON

35700 Rennes

France

☎ +07 67 48 34 64

✉ nguyenquanbahong@gmail.com

Dear Professors,

I am writing in regard to the possibility of joining your research team. I am a Vietnamese student, pursuing PhD in Mathematics, with current research interests:

Analysis Nonlinear Partial Differential Equations (PDEs), Degenerate Elliptic Equations.

Numerical Analysis Finite Difference Method (FDM), Finite Element Method (FEM), Finite Volume Method (FVM), Modeling Techniques.

Applied Math Inverse Problems, Regularization Theory, Ill-posed Problems.

My path to Mathematics emerged since I was in high school. The challenge of thinking and the process of logic always attract me to mathematical problems, however difficult and regardless of the form in which they come. I attended a lot of mathematical competitions for students in both local areas and nationwide, and achieved a considerable number of prizes. At this time, the only idea about Mathematics which I had in my mind is about studying for competitions.

But everything changed when I went to university, I realized the illusion about Olympiads. Mathematics is truly the queen of Sciences. The only problem about studying Mathematics is the way people profit from it. Through seventeen years of studying, I saw most of my classmates only pursue high grades in Mathematics, not the true knowledge and the benefits which it brings to us. They do not need to understand Mathematics, they just use it, as a tool, to gain well-paid jobs. As a committed, genuine and quite idealistic mathematical student, I have encountered a lot of unavoidable troubles. However, this can not prevent me from pursuing true knowledge rather than money.

I hold Bachelor in Science degree in Mathematics (2014–2018), at Ho Chi Minh University of Science, Vietnam; and will get a Master in Science degree in Mathematical Analysis (2018–2019) at Université de Rennes 1, France, in July this year. At this point, I am working on my Master thesis, titled *Staggered and well-balanced discretization of shallow-water equations*, which focuses on modern numerical schemes to preserve some well-known physical quantities (mass, momentum, etc.) and steady states for water flows.

I have been fortunate enough to have an opportunity to obtain Lebesgue Master Scholarship in order to experience one-year Master 2 in Fundamental Mathematics, mainly Pure Analysis. Pure Mathematics is truly beautiful to me because of the deep

and meaningful ideas touched upon by it, the vastness of these ideas, the clearness and elegance of their representations. Pure Mathematics also gives me the ability to apply knowledge by approaching things logically, and thinking clearly. Nevertheless, in spite of how much I love Pure Mathematics, I have considered very deliberately and decided to change to Applied Mathematics. The fundamental reason is that hundreds lines of code, simulation figures, error tables, especially the connection between Mathematics and Real World Problems somehow attract me much more than highly abstract mathematical concepts emerged in Pure Mathematics.

With the background knowledge I have in Mathematics, I strongly feel that a PhD position in Applied Mathematics will be very relevant to my practice in my country, Vietnam. I plan to work with research based groups in both Pure and Applied Mathematics sector as well as in local universities with the highest aim to contribute to the national science.

Owning to limited resources, I have not been able to proceed with further studies here in Rennes, France or elsewhere as I lack the necessary fund. I would be grateful to be provided with sponsorship to further my career and a PhD grant will be immensely helpful. In addition, I will get a chance through a PhD offer to interact with students from diverse professional and cultural backgrounds, drawn from over the world. The exposure is important for interaction and integration of diverse ideas and perspectives pertaining to various global issues.

Finally I am determined to make the most out of the grant benefits. I will optimize my stay at Europe to garner a wealth of ideas that will apply when I return to my country and at the same time contribute to a better Europe's science with my country Vietnam.

Once again I am grateful for considering my application and I look forward to a favorable reply.

Yours sincerely,
NGUYEN Quan Ba Hong