

Charlemont grant report

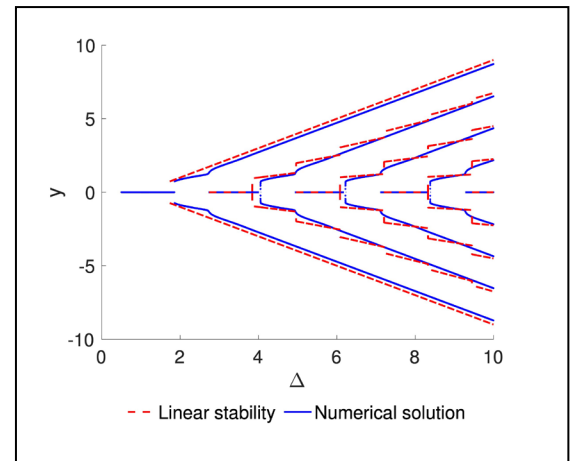
Recipient name:	Dr. Alina Dubovskaya
Discipline and subject area:	Sciences
Amount and year awarded:	€2,449. in 2023
Title of project:	Mathematical modelling of opinion dynamics on complex networks.

Summary of findings:

The goal of this project was to lay the foundation for a mutual project with the group of Prof. Mason Porter at the University of California, Los Angeles (UCLA), focusing on the mathematical modelling of opinion formation on complex networks.

The main outcomes were the following:

- I established a working collaboration with the world's leading applied mathematician, Prof. Mason Porter, and started working on a project of mutual interest that I hope to develop for publication within a year. The topic we settled on is the extension of my recent work in the mean-field Deffuant model (Dubovskaya et al, SIAP, 2023) to the broad class of networks describable by a graphon function. After I returned to Ireland, we continued meeting online, focusing on advancing our joint project.
- During my visit, I worked directly with Prof. Porter and also interacted with researchers within his professional network. This connected me with over ten researchers from different US institutions. I joined two collaborative projects: one on Opinion Dynamics Coupled with Disease Dynamics in collaboration with Kristin Kurianski (California State University), Anna Nelson (Duke University in Durham, North Carolina), Filippo Riscica (University of Hamburg), Yang Yang (Ohio State University), Lihong Zhao (University of California, Merced); and the other on Multidimensional Bounded Confidence Models in collaboration with Daniel Cooney (University of Illinois), Lora Bailey (Grand Valley State University), Casey Johnson (UCLA), Weiqi Chu (University of Massachusetts), and Edith Jin Zhang (Columbia University), Stephanie Dodson (Colby College). We continue working on the projects remotely.
- During my visit, I was granted access to the UCLA server, which I am allowed to use remotely from Ireland for the purpose of the project. We do not have a machine of this kind in my home





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institution, and this allows me to perform computationally expensive experiments that I could not do without such a server.

Plans for continuing collaboration:

We continued having regular online meetings with Prof. Porter after my return. He invited me to come visit his group again, and I am looking for ways to make it possible. I also applied for a postdoctoral position in Prof. Porter's department at UCLA, which will start in autumn 2024. He offered to be my referee, which I believe significantly strengthened my job application.

During my visit, I joined two collaborative projects (described above) with researchers from the following Universities: University of California, Los Angeles (UCLA); California State University; Duke University in Durham, North Carolina; University of Hamburg; Ohio State University; University of California, Merced; University of Illinois; Grand Valley State University; University of Massachusetts and Columbia University. We continue collaborating on these projects through biweekly online meetings.

Publications associated with this project that you have been involved in:

In the long run, I plan to publish a paper on the mean-field Deffuant model on graphons in co-authorship with Prof. Porter. I also hope that the two projects I joined will eventually result in publications.

Dissemination and plans for future dissemination:

I submitted the abstract to the Joint Mathematical Meeting 2024, the largest mathematical conference and career fair in the USA, which will be also attended by Prof. Porter's group. My abstract was accepted and I have applied for an American Mathematical Society (AMS MRC) travel grant to partially cover the expenses for the travel. I am currently awaiting the results of my grant application.