

Newton Advanced Fellowships

Meet the scientists



In 2015 Dr Ruben Fossion, Assistant Professor at the National Autonomous University of Mexico, won a Newton Advanced Fellowship to build a three year collaboration with Maia Angelova, Professor Of Data Analytics And Machine Learning at Northumbria University. We talked to Ruben about his experience of the project so far.

What do you work on?

I'm a physicist, working with an interdisciplinary team including medical doctors, computer experts and programmers.

My project is on quantifying frailty associated with age or chronic disease. Someone who is frail is not ill, but they are less robust than young adults. If something happens to them, there is a higher chance for a negative end result such as becoming dependent, chronically ill, or even dying.

Most of the important problems in the world relate to the resilience or fragility of complex dynamical systems: in economics, people try to understand what generates a globalized financial crisis and how you can prevent it, in climate science there are important efforts to understand global warming and what we can do about it.

I collaborate across all these fields, sharing ideas and methods on how to quantify the resilience or fragility of complex systems and to try to prevent their possible collapse.

How did you find applying for the Newton Advanced Fellowship?

I knew Maia from another collaboration. I was very enthusiastic because of this previous contact so I wrote an application as quickly as possible. We talked by email, we were on Skype for hours, we designed a project and wrote it and submitted it, and six months later we had a happy response.

There are two important aspects of our project. One is theoretical – from a physicist’s point of view that’s the easiest because we can just sit behind our desks and study the existing data on a computer. As a physicist, the next part – measuring data in patients – will be the most challenging, but it’s very exciting!

How do you think this Fellowship will affect your career?

I go to conferences, and I’ve been to Northumbria University a couple of times, but a new thing for me that stands out is that I can take my students with me. That’s fantastic, because my students are interacting with brand new research, and meeting international research professionals working on all kinds of cutting edge methods. I think that’s fantastic.

I really enjoy interaction with my students. They’re really enthusiastic, and through the opportunities I’ve been able to share with them through this Newton Advanced Fellowship, they are becoming even more enthusiastic.

What are your plans for the rest of the Fellowship?

My Fellowship has not been running for a year yet, and I’ve already been to the UK twice, and Maia has been to Mexico once. She will be visiting again next March, and then I plan to come in June or July.

The bilateral agreement between universities in the UK and in Mexico has been a challenge - it has to be bilingual, both in English and in Spanish, so each time the administrators and the lawyers make a correction, I need to translate it back and forth, which is taking a bit longer than we expected, but it should be finalised very soon.

By comparison, I think the next two years should be very smooth! I think this is good practice, it’s an integral part of most research projects, so it’s been very useful experience for the future. I am very happy right now - let’s see what comes out of the second and third years!