

Press release

Observing the ocean of unknown things: Barbara Fantechi awarded by the Accademia dei Lincei

**The SISSA scientist received the prestigious “Prof. Luigi Tartufari”
international award for mathematics in the presence of the Italian
President Sergio Mattarella**



Trieste, 22 June 2018

«It is a great honour for me to receive this award. I see it as an acknowledgement for my research, but also for SISSA, the institute where I have worked for many years and which has given me the opportunity to carry out my studies in the best possible way, to meet outstanding scientists, to engage in an international context, to train new researchers and to thrive as a person and as a scientist». This is how Barbara

Fantechi comments the announcement of the “Prof. Luigi Tartufari” international award 2018 in mathematics, that she obtained with equal merit together with Professor Felix Otto, and that was presented to her by the Accademia Nazionale dei Lincei. Barbara Fantechi studied at the Scuola Normale Superiore in Pisa and continued her career working in important research institutes in Italy and abroad. In the sector of algebraic geometry, her field of interest, she is the author of very high profile scientific publications. Recently, she spent some time studying and lecturing at the University of Berkeley with the prestigious title of "Chancellor Professor". The award was presented during the Solemn closing Ceremony of the Lincei's Academic Year, the 415th since the foundation of the world's oldest Academy, on 22nd June at Palazzo Corsini, Rome. The Italian President, Sergio Mattarella, attended the ceremony.

The desire to find out how the story ends...

«How did my journey in mathematics start? I was in secondary school, grappling with Pythagoras' theorem. I was thinking of right-angled triangles and wondering how many different shapes of them existed. How many triangles could be found, if someone had the patience of making a list? And, I discovered that they were countless. And this very inquisitiveness, the feeling I had in front of that problem, the desire to find out how the story ends... They have never left me», says Barbara Fantechi. «During my doctorate I quickly accumulated techniques and knowledge. At that point, the ocean of unknown things opened up to me. I understood that I could discover what no one knows, which is really exciting». In that first question, in that unknown number of possible triangles discovered during her school years, the line of her studies found its first seed: «When there are infinite objects of the same kind, (like right-angled triangles!) it is important to give them the correct geometric structure, studying the so-called spaces of modules. One of the key applications is enumerative geometry, which studies the number of solutions to geometric questions: an area of research in which Italy has given important contributions for more than a century. We try to build a substratum of fundamental definitions and theorems, useful for posing new questions. And solving them». She admits that her area of interest is not one of the easiest: «These are difficult things even for experts. It is rather technical research but, in its specific nature, I can say that my experience and expertise are quite unique». What she enjoys, in her research activity, is to find simple points of view for complicated things: «I don't pursue amazing results. I like to explain complex problems in a natural, genuine, clear way. This is how I develop theorems and definitions that are also applied to physics. I often have no direct contact with that world but what I do is used and has a meaning in that research sector too. I find this very stimulating».

Maths is creative, fun and amazing

With this prestigious award and such a great career, have you any advice for the new generations of scientists, students, professors and teachers engaged in a subject that has always been considered so complicated? «It is necessary to overcome maths related stereotypes». For example? «That it is unsociable. It's not true; the important recent discoveries, such as the solving of Fermat's last theorem, are the results of work involving many people. You can only make progress by interacting with others, in an exchange which is absolutely essential». It is not true that you have to be a genius to be a mathematician. «It is a misleading preconception, which makes people leave such a fascinating field right from the start. At school, students should have the possibility to understand the beauty of this science, the creativity it requires, the enjoyment it can give. Which is immense». But this, says professor Fantechi, doesn't happen: «I know this for a fact because I have three school-aged children. The maths program is stuck in the middle of the Nineteenth Century, but there are many important things that came after that period. Without considering the fact that students should be able to discover that mathematics is not something which is lowered from above, cold and motionless, as it is usually presented to them. On the contrary, it is the result of amazing stories, of challenges, of intuitions, of incredible inspiration, that come from different worlds, like the art world. Missing out on such a rich and interesting universe is a real shame».

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