VÄISÄLÄ PRIZE

Sabrina Maniscalco

THE ACADEMY chose as the second recipient of the Väisälä Prize in 2017 Professor Sabrina Maniscalco, researcher in quantum physics and its associated technology at the University of Turku. Sabrina Maniscalco gained her Ph.D. at the University of Palermo, Italy, in 2004 and then worked as a postdoctoral researcher in Bulgaria and South Africa before joining the quantum physics research group in Turku, where she became a member of the research collegium and a research fellow of the Academy of Finland. For the period 2011–2014 she held a professorship at the Heriot-Watt University in Scotland, until her appointment in 2014 as a professor of theoretical physics at the University of Turku. She is also an adjunct professor at the Aalto University and a member of that university's centre of excellence in quantum technology.

Sabrina Maniscalco was attracted to Finland by the interesting offer of work at the University of Turku. The Finnish way of life is utterly different from the hectic rhythm of life on her native island of Sicily, but she confesses to being one of those foreigners on whom the quiet and tranquillity of Finland has left a lasting impression.

As a quantum physicist she has been exploring the fact that particles cannot always be pinned down to a certain place. What succeeds at the quantum level does not succeed on a larger scale, but it is impossible to say why that should be so.

"There is nothing to prevent me feeling that I am simultaneously eating ice-cream in Sicily and bathing in a smoke sauna in Finland. They are both things that I love doing, and in my thoughts I can experience them at one and the same time," she maintains.

Within her field of quantum physics and quantum technology, Sabrina Maniscalco has concentrated in particular on the fundamentals of this theory. Quantum technology is a rapidly developing field with applications in communications, the handling of information and ultra-sensitive measurement techniques. This is

Professor Sabrina Maniscalco's research field is quantum physics and quantum technology

based on the concepts of quantum entanglement and superposition and enables ultra-fast calculations and the use of undecipherable encryption techniques in data transmission.

"It is difficult to tell people about quantum physics as a phenomenon, because you can only talk about it in fairly complex language, the language of mathematics. But at the same time quantum physics is bringing about a revolution that will make digitalization universally possible and open up vast new perspectives," she emphasizes.

She is full of praise for the research facilities in Turku and in Finland in general, and she doesn't feel at all that limited possibilities, or even limited financial resources, would constitute a barrier to internationally highly competitive standards of research in this country.

Researchers in quantum physics throughout the world form one large, closely knit family with very brisk exchanges of information, in spite of the exceptionally tight competition between the United States, China and Europe.

Professor Maniscalco has published almost 100 papers in her own field of research, and these have been widely cited by others. She has also taken part in numerous European research projects and is still doing so, and she has presented papers at more than 40 international conferences. Her work has been noted in the media, including the New Scientist magazine, BBC World Service radio programmes and TED Global events.

Sabrina Maniscalco is also very active in making the results of scientific investigations known to a broad sector of the general public. She was instrumental, for instance, in arranging an International Science Day and a Quantum Circus as parts of the programme for Turku's year as the European Capital of Culture, and she has more recently arranged for Turku to join the international TEDx network. She has also produced a 40-minute documentary film, Inside the Light, on the interaction

between light and matter at the quantum physics level.

As she puts it, "I am passionate about my work, and so I want to make the public aware of it. That is my duty, since the vast majority of my funding comes from public sources. It's a marvellous thing to be able to explain to people what quantum physics is all about, and to see the enthusiasm with which they receive this information."

Väisälä Prize is awarded annually to 1–3 already distinguished scientists in the active parts of their careers.