

Emilia Kilpua

“**Infinity is such** a fascinating concept that it’s almost impossible to wrap your head around it. If you start mulling it over in the evening, you could easily lose sleep over it. Perhaps the most beautiful thing about the universe is precisely that there is still so much about it that is unknown and left for us to find out”, says Emilia Kilpua, Professor in Space Physics at the University of Helsinki.

Kilpua received the Väisälä Prize 2021 from the Finnish Academy of Science and Letters. Väisälä Prizes are awarded annually to distinguished scientists in mathematics and science who are in the active part of their careers. The prizes were now awarded for the 22nd time, and they are worth 15,000 euros.

Among other topics, Kilpua studies giant magnetic plasma clouds that are released from the Sun’s corona into space as coronal mass ejections. The ejections cause space weather storms in near-Earth space, which can in turn affect the technology that we use on our planet. The better

we understand the nature and formation of these ejections, the better we will be able to anticipate their impact.

“Space is a fascinating field of research, because it constantly presents things that are unfamiliar or unknown. Throughout history, it has had a huge impact on humanity as a whole and our perceived place in the universe. My research is related to broader research on space and space physics, which is a thing for the future. Space is utilized more and more as we speak. It’s great to be involved in such a big and important research effort”, says Kilpua.

We are not far from a time when we will start mining asteroids for various materials. Plans for the more distant future include visions of humans leaving Earth.

“That may even be inevitable at some point, but it does not mean that we will first use up everything on this planet and then head out to look for the next one. The Earth is unique and we should absolutely take good care of it so that we can continue to live here for a long time”, says Kilpua.

”We are fascinated
by the unknown in
space”



Kilpua became a space scientist almost by accident. She was a third-year student at the University of Helsinki, studying theoretical physics as a major and astronomy as a minor, when she randomly chose plasma physics as a filler course. The course went so well that the lecturer, Professor Hannu Koskinen, invited her to work a summer job at the Finnish Meteorological Institute, studying coronal mass ejections.

”The SOHO solar probe has just been launched and it was producing a lot of measurements. It was something new and interesting. And it naturally helped that the students and scientists were all friendly. I chose this path and haven’t looked back”, says Kilpua.

The professor has developed her own relationship with the Sun over the years. When she first studied astronomy, she was fascinated by everything that was as remote as possible, with little or no impact on our everyday lives.

”I have come to appreciate the Sun. It rarely crosses my mind that that ball shining in the sky is the thing I’m studying for work – I just get excited if it’s a sunny day. But when you start thinking about it, it’s quite thrilling to think that the Sun is really throwing those ejections out there, 150 million kilometres away. It’s fun to study, because it provides excellent measurements compared to other stars.”

Like many space scientists, Kilpua enjoys science fiction.

“The books of Isaac Asimov, *Dune* by Frank Herbert, *Hyperion* by Dan Simmons and naturally *2001: A Space Odyssey* by Arthur C. Clarke... Science fiction has fascinating elements, and the stories give you perspective and thoughts that you may also come across in scientific contexts”, says Kilpua.

Some stories are told as if they were true. How does a space scientist feel when someone claims that the Earth is flat?

“With all the reliable knowledge that we have today, it feels strange that such views still exist. It goes to show that scien-

tists have a responsibility to describe their research in plain terms. The popularization of science is definitely necessary, as is basic research. Scientists should under no circumstances forget this”, says Kilpua.

She herself has not yet made it up into space. Where would she go, if she could go anywhere in space?

“It might be fun to cruise around the solar system and see how it looks from different angles. Do small fly-bys via Jupiter and Saturn and other planets. After that, I might think about taking a longer trip to other stars. I wonder what it would look like on a planet that is orbited by two suns”, Kilpua ponders.