Research aims at understanding mysterious music phenomenon

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Mari Kimura in the echo free chamber at the University Hospital in Tromsø. Photo: Maja Sojtaric

Mari Kimura is an acclaimed Japanese violinist who has the rare ability of producing strange sounds with her instrument. She doesn't know how this is possible, but a team of scientists at University of Tromsø (Norway) are confident in finding an answer to the puzzle.

Mari Kimura is a New York based solo violinist that usually lectures at the acknowledged Juilliard School of Music. She is one of the extremely few people who can produce controlled subharmonic tones on violin. Kimura has developed this trait to a signature feature in her compositions and improvisations. The sounds she plays on violin are usually found in a cello.

"I have done this for ten years, and the researchers in US and Japan have tried to figure it out for as long. I don't really know what it is I do, because I have an empirical approach to it. It all happens by the method of trial and error", says Kimura.

Solving the mystery

Scientists from Stanford, Columbia and Tokyo University are amongst those who found the phenomenon interesting. However they did not have the necessary combination of competence within physics, as well as interest in music, to be able to work exhaustingly on figuring out Kimura's subharmonic violin pitch. In Tromsø however Kimura found the right kind of scientists that can measure and explain the phenomenon.

"We have definitely what it takes to solve this mystery. We have worked with strange and exotic sound systems earlier, and we have the ability to make good measurements, correct theoretical modelling and of course the necessary musical insight and interest", says the physics professor Alfred Hanssen.

Mutual advantage

The precise measurements of the Kimura's low-pitched sounds were made at the echo free chamber at the University Hospital. By applying even pressure on the string by use of fine and steady movements of the bow Kimura can conjure many different tones from one place on the string. Measurements of these fascinating sounds will be used in research for years to come.

"Kimura makes a violin string vibrate in a totally new way. In physics we call this a driven and damped non-linear system, which we are

particularly preoccupied with in our research. By understanding the way she plays the violin, we are contributing to understanding of similar processes in the nature", says Hanssen.

Mari Kimura too hopes to take advantage of the results that professor Hanssen and his assistants, PhD candidate Heidi Hindberg and post.doc Tor Arne Øigård achieve with their scientific approach.

"My ambition is to find out if there is more that I can do, if there is something to reach for. As an artist you are always searching for ways to expand the sound, to expand the use of violin as an instrument".

Source: By: Maja Sojtaric, University of Tromsø