Pressemitteilung

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Dr. Susanne Langer
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Causes of tinnitus

Approximately three million people in Germany suffer from chronic tinnitus. There are various theories of what causes the chronic ringing in the ears. A team of researchers at Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU) have designed a computer-based model to explain the phenomenon.

FAU researchers led by Dr. Patrick Krauss, Professorship for Experimental Ear, Nose and Throat Medicine, have developed a model which explains tinnitus better than previous models. The model is based on ‘stochastic resonance’: ‘When a signal is too weak to be measured by a sensor, a random signal, white noise, can be added to make it detectable,’ explains Krauss. The brains of those with healthy hearing use stochastic resonance to optimise the transfer of signals from the ear to the brain in constantly changing acoustic surroundings. If insufficient signals are transferred to the brain, for example due to a loss of hearing, the white noise is amplified by the brain to at least partially compensate for the hearing loss. The increased white noise corresponds to the increased nerve cell activity along the auditory pathway in the case of tinnitus.

The research project is to receive funding of 400,000 euros from the German Research Foundation (DFG) from May. Computer simulations are to be used to expand and refine the existing model and use it as a basis for developing a new treatment strategy. ‘Inner nerve cell noise perceived as tinnitus could for example be replaced by external acoustic noise,’ says Krauss.

wissenschaftliche Ansprechpartner:
Further information:
Dr. Patrick Krauss
patrick.krauss@uk-erlangen.de