VARIABLE INTENSITY STIMULATION TECHNOLOGY (VIST) FOR COCHLEAR IMPLANT PROGRAMMING

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Value Proposition: *New process for improving the effectiveness of cochlear implants.*

Technology Description

Researchers at Washington University in St. Louis have developed a method that utilizes variable intensity simulation to improve the overall effectiveness of cochlear implants. Cochlear implants (CIs) have revolutionized hearing restoration for individuals with severe-to-profound hearing loss who receive minimal benefit from traditional hearing aids. These devices operate by capturing sound signals, which are then processed to extract crucial information. The current, static approach in CI programming, which uses standard frequency ranges that do not adapt place to changes in sound intensity, can detract from the naturalness of perceived sounds.

This method addresses the current limitations by dynamically adjusting the location of frequency mapping based on detected intensity levels, enhancing the naturalness of sounds while allowing for a more accurate and personalized auditory experience.

Publications

Walia A, Shew MA, Lefler SM, Ortmann AJ, Ioerger P, Wu M, Varghese J, Herzog JA, Buchman CA. Intensity-Driven Shifts in Tonotopic Coding in Humans: A Framework for Cochlear Implant Frequency Allocation. medRxiv [Preprint]. 2025 May 6:2025.05.05.25327002. doi: 10.1101/2025.05.05.25327002. PMID: 40385426; PMCID: PMC12083625.

Applications

- Cochlear implants
- Hearing restoration

Key Advantages

- Can adjust the localization of frequency mapping
- Enhances the naturalness of sound

Patents

Patent application filed