

**CIC – First results with a new concept for the management of channel interactions in cochlear implants**

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In cochlear implants, the term channel interaction refers to the overlap of excitation produced by the electrodes along the intra-cochlear electrode array, in both space and time. Spatial channel interactions lead to smearing and blurring of the acoustic spectrum perceived by the CI user, i.e. the tonotopic frequency information along the cochlea, and are one of the most serious problems in cochlear implants. In CIS and other stimulation strategies, spatial channel interactions are dealt with using successive pulsatile stimulation where only one channel is stimulated at a certain point in time so that spatial overlap of excitation does not exist. Although this concept has been proven to be highly successful, it has the serious disadvantage of limiting the stimulation rate. Parallel pulsatile stimulation would allow increasing the rate further but re-introduces the problem of channel interactions so that speech perception results have been disappointing so far. With the PULSARCI100 cochlear implant, MED?EL is introducing Channel Interaction Compensation (CIC), which is a completely new concept of channel interaction management. In CIC, a model for channel interactions is used to recover the original acoustic spectrum even with channel interactions in place. First results of speech perception tests with CIC are promising and will be presented and discussed.

