

## **Abstract EFAS/DGA 2007**

### **Cochlear Implantation as a treatment for unilateral deafness associated with ipsilateral tinnitus: a case study**

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Of the overall population, 10 to 30% suffer from chronic tinnitus and the percentage is significantly higher in the population of deafened people. Still, no universal cure is available today. Several treatments, such as retraining or masking, are based on acoustic input. Therefore, those treatments do not succeed in subjects who are deaf in the affected ear. However, tinnitus suppression utilizing electrical stimulation of the auditory nerve has been reported to be successful by various research groups.

Therefore, a study with five subjects was initiated to investigate whether cochlear implantation is an appropriate treatment for unilateral deafness associated with ipsilateral tinnitus. The HiRes90K implant offers several features that may be beneficial when combining acoustic and electrical stimulation. A high update rate allows detailed transmission of the sound information in the time domain. This may help to increase the acceptance of the cochlear implant sound quality the particular patient group. Further increase of the sound quality may be given by the new feature of current steering technique. Current steering increases the number of stimulation sites beyond the number of electrode contacts allowing increasing the fidelity even further.

At this time, two subjects are enrolled, one of them implanted in October 2006. The implanted subject reports reduced strain from his tinnitus and is able to follow audiobooks through his implant. In everyday life he relies on his normal hearing ear which results in only little training of the implanted ear compared to regular cochlear implant subjects. Speech perception tests show benefit from the cochlear implant, however, the scores are lower than known from regular users.

Results of the effect of the electrical stimulation on tinnitus as well as data on the regained hearing with respect to speech perception in noise and directional hearing will be presented

