

**Dipl.-Ing. Maja Serman, Ph.D.**  
Erlangen  
Germany

## **Research on communication-friendly hearing aids: EEG evaluation of different signal processing strategies**

From the perspective of evolution, the function of the hearing system is to warn us of what is happening in the environment, especially from directions we cannot see. Hearing acts as a life-saving alarm system that informs us of all possible dangers out there. Equally important, this system enables us to understand language with all its complex dimensions. Recent research suggests that not only speech comprehension, but also being aware of, and feeling safe in, our surroundings plays a role in our communicative behaviour. Evaluating hearing aids (HA) for successful communication thus requires methods that look at human behaviour holistically, not just speech intelligibility performance. In a recent study, we investigated brain activity of normal hearing and hearing impaired individuals in complex experimental settings with different HA processing strategies. We were interested in the relationship between HA processing and sound representations in the brain, but also in how these HA strategies affect the performance and physical response of our subjects. Using EEG technology, we show objectively for the first time that it is possible to support both speech comprehension and perception of the environment with one of these hearing aid processing strategies.