

## **Abstract EFAS/DGA 2007**

### **Prediction of speech intelligibility in fluctuating noise**

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Speech intelligibility in fluctuating noise is a very useful diagnostical measure, since speech reception thresholds show larger variations between different listeners than for stationary noise. Predictors of speech intelligibility for hearing impaired listeners can be a very important tool in audiology because they can indicate clinical relevant discrepancies between measured intelligibility values and performance that can be expected from the pure ton audiogram.

In silence and in stationary noise the speech intelligibility index (SII) is a usable predictor for speech intelligibility. Rhebergen et al. (2005) proposed an extension to the SII for fluctuating noises. Their basic idea was to split the noise signal in a given speech-in-noise situation into short term windows and to calculate the SII for each window. An overall SII is calculated by taking the mean over all SII values. One constraint in this extension is that only the noise was assumed to be fluctuating, the speech was modelled as a non fluctuating noise with a speech-like long-term spectrum. Dropping this constraint gives a more realistic simulation of the given hearing situation, because a speech pause in a noise pause should not give any benefit in intelligibility. On the other hand the SII was originally not developed for very short time-windows, which may possibly result in inappropriate predictions.

The consequences of different approaches to model fluctuations of the speech signal was investigated and compared with the results speech reception thresholds determined with the Oldenburg sentence test from 113 subjects. For stationary noise the correlation is  $r=0.59$  (non fluctuating speech) and  $r=0.61$  (fluctuating speech). For fluctuating noise the correlation is  $r=0.70$  (both non fluctuating and fluctuating speech).

