1. INTRODUCTION

- **Issues:** Listening tests, which rely on subjective feedback under laboratory test conditions, can be expensive, time consuming, and may present inconsistencies with test/re-test reliability.

- **Issues:** Speech perception can be degraded at high levels for both normal & impaired listeners [2].

- **Auditory Nerve (AN) models** are useful to detect, analyze, and segregate dynamic acoustic stimuli in complex environments [1].

- **Spectral Envelope (ENV)** is sufficient for understanding speech in quiet whereas the Temporal Fine Structure (TFS) is necessary for speech segregation in noisy conditions [3].

2. METHODS

- **Predicting speech intelligibility under different types of noises and distortions**

- **Comparing predicted scores with subjective scores and scores from existing metrics**

3. METHODS

- **Test Corpora:**
  - **Databases:** IEEE sentences, NU#6 words.
  - **SNR:** -20 to 30 dB; dB-SPL: 65~95 dB.
  - **Noise:** Babble, Speech shape, Interrupted, Car.
  - **Distortions:** Phase jitter, Peak clipping, Center Clipping.
  - **Subjective Data Studies:** Dubno [4], Studebaker [5]

4. RESULTS

- **Effects of Noise Types:**

- **Effects of Distortion:**
  - **1. Phase Jitter (PJ):**
    - SNR: 5 dB
    - Corpus: 200 NU#6 words

5. RESULTS

- **Effects of Distortion (cont.)**
  - **2. Peak & Center Clipping (C-C):**
    - SNR: 5 dB
    - Corpus: TIMIT Sentence THR: 0-100%

6. CONCLUSIONS

- Proposed metric successfully predicts SP under noisy and distorted conditions

- Recovered ENV alone or with original ENV shows better correlation performance

- Comparison with existing metrics:

7. REFERENCES

References:

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**Fig. 1:** Basic block diagram of proposed method.

**Fig. 2:** Signal processing steps for generating original and recovered envelope.

**Fig. 3:** Auditory Nerve Model (Zilany and Bruce et al. 2006 [1])

**Fig. 4:** Test/re test reliability.