CONCLUSION

- A novel algorithm has been proposed to reduce pre-echo noise, requiring no encoder alterations and no reduction of coding efficiency. Therefore, it is compatible with encoders that are already deployed.
- The method applies to existent standards and does not reduce coding efficiency, as the encoder does not require any modifications.

ALGORITHM

- The likelihood of each frame to produce pre-echo noise determines if it processed. This decision is based on transient characteristics that are measured and reused by the noise reduction method.
- Processed frames are first split into two parts, i.e. the pre-transient and post-transient parts.
- The pre-transient noise produced by the quantization of the energetic transient signal is characterized using decoded codec parameters, transient features and MDCT/ODFT transform properties.
- This precise frequency-domain noise estimate allows spectral subtraction to remove pre-echo noise in the pre- signal without adding any artefacts.
- Total frame energy is preserved by spectral addition to the post- signal.

RESULTS

- Formal subjective testing using the MUSHRA methodology shows an average gain of 2 points for MPEG AAC at 24 and 28 kbps.
- Objective SNR testing produced an average gain between 0.22 and 0.45 dB for MPEG AAC processed frames encoded between 12-32 kbps.

INTRODUCTION

- Pre-echo noise is one of the most common yet detrimental artefacts in frequency-domain audio coders such as MPEG AAC, it is discernable even without direct comparison to the original signal.
- Current pre-echo noise reduction techniques reduce efficiency, either by transmitting extra bits to describe the transient (e.g. TNS) or by using less efficient short blocks to minimize the problem.
- We developed a method that makes better use of readily available information at the decoder to accurately model the noise spread caused by transient signal quantization and significantly reduce it.
- The method applies to existent standards and does not reduce coding efficiency, as the encoder does not require any modifications.