Psychoacoustic masking effects

- Masking effect are not included directly in PESQ.
- However, PESQ’s weighting-over-time models a similar effect indirectly.
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Impact of random losses on speech quality.

![Graph showing the impact of random losses on speech quality](image-url)
Impact on random losses on importance

![Graph showing the impact of frame loss rate on the importance of all lost frames. The graph has a scale ranging from 0 to 20 for the frame loss rate (%), and from 0 to 150 for the importance of all lost frames. Different lines represent different codecs: G.711, G.729, AMR 12.2, and AMR 4.75. The R² values are provided for each line, indicating the goodness of fit for the regression models.](image-url)
Importance of second loss, depending on distance between two losses

Mean importance

Distance between two frame losses (ms)

G.711  G.729  AMR 12.2  AMR 4.75
Correlation coefficiency (R) between our model and PESQ.
Limits of our model (to do list)

- The effect of error propagation is not modeled, yet.
- The effect of concealment in cases of bursty losses needs to be considered.
- Verification with subjective (human based) speech ratings.
- Can be used standardization in ITU-T P.VTQ or ITU-T G.107.
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Summary

- Substantial reduction of energy consumption if only important frames are transmitted (e.g. for Wifi VoiP phones?).
- We presented a new metric to describe the importance of a speech frame and an aggregation function considering post-masking effects.

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Breakfast from 8am to 11.30am,
afternoon tea from 3pm to 6.30pm