Claims

1. An audio decoder for providing a decoded audio information on the basis of an encoded audio information comprising linear prediction coefficients (LPC),
the audio decoder comprising:
- a tilt adjuster configured to adjust a tilt of a background noise, wherein the tilt adjuster is configured to use linear prediction coefficients of a current frame to obtain a tilt information; and
- a decoder core configured to decode an audio information of the current frame using the linear prediction coefficients of the current frame to obtain a decoded core coder output signal; and
- a noise inserter configured to add the tilt-adjusted background noise to the current frame, to perform a noise filling.

2. The audio decoder according to claim 1, **wherein** the tilt adjuster is configured to use a result of a first-order analysis of the linear prediction coefficients of the current frame to obtain the tilt information.

3. The audio decoder according to claim 2, **wherein** the tilt adjuster is configured to obtain the tilt information using a calculation of a gain *g* of the linear prediction coefficients of the current frame as the first-order analysis.

4. The audio decoder according to any of the previous claims, **wherein** the audio decoder furthermore comprises:
- a noise level estimator configured to estimate a noise level for a current frame using a plurality of linear prediction coefficient of at least one previous frame to obtain a noise level information; - wherein the noise inserter configured to add the background noise to the current frame in dependence on the noise level information provided by the noise level estimator;

wherein the audio decoder is adapted to decode an excitation signal of the current frame and to compute its root mean square e_{rms};

wherein the audio decoder is adapted to compute a peak level p of a transfer function of an LPC filter of the current frame;

wherein the audio decoder is adapted to compute a spectral minimum m_f of the current audio frame by computing the quotient of the root mean square e_{rms} and the peak level p to obtain the noise level information;

wherein the noise level estimator is adapted to estimate the noise level on the basis of two or more quotients of different audio frames.

5. The audio decoder according to claim 4, wherein the noise inserter adds the noise depending on linear prediction coefficients used in decoding the audio information of the current frame and used in decoding the audio information of one or more previous frames.

6. The audio decoder according to claim 4 or claim 5, **wherein** the audio decoder comprises a frame type determinator for determining a frame type of the current frame, the frame type determinator being configured to identify whether the frame type of the current frame is speech or general audio, so that the noise level estimation can be performed depending on the frame type of the current frame.

7. The audio decoder according to one of claims 4 to 6, **wherein** the audio decoder is adapted to compute the root mean square e_{rms} of the current frame from the time domain representation of the current frame to obtain the noise level information under the condition that the current frame is of a speech type.

8. The audio decoder according to one of claims 4 to 7, **wherein** the audio decoder is adapted to decode an unshaped MDCT-excitation of the current frame and to compute its root mean square e_{rms} from the spectral domain representation of the current frame to obtain the noise level information if the current frame is of a general audio type.

9. The audio decoder according to any of the claims 4 to 8, **wherein** the audio decoder is adapted to enqueue the quotient obtained from the current audio frame in the noise level estimator regardless of the frame type, the noise level estimator

comprising a noise level storage for two or more quotients obtained from different audio frames.

10. The audio decoder according to any of the claims 4 to 9, **wherein** the noise level estimator is adapted to estimate the noise level on the basis of statistical analysis of two or more quotients of different audio frames.

11. The audio decoder according to any of the preceding claims, **wherein** the audio decoder comprises a de-emphasis filter to de-emphasize the current frame, the audio decoder being adapted to applying the de-emphasis filter on the current frame after the noise inserter added the noise to the current frame.

12. The audio decoder according to any of the preceding claims, **wherein** the audio decoder comprises a noise generator, the noise generator being adapted to generate the noise to be added to the current frame by the noise inserter.

13. The audio decoder according to any of the preceding claims, **wherein the audio decoder comprises a** noise generator configured to generate random white noise.

14. The audio decoder according to any of the preceding claims, **wherein** the audio decoder is configured to use a decoder based on one or more of the decoders AMR-WB, G.718 or LD-USAC (EVS) in order to decode the encoded audio information.

15. A method for providing a decoded audio information on the basis of an encoded audio information comprising linear prediction coefficients (LPC),
the method comprising:
- estimating a noise level;
- adjusting a tilt of a background noise, wherein linear prediction coefficients of a current frame are used to obtain a tilt information; and
- decoding an audio information of the current frame using the linear prediction coefficients of the current frame to obtain a decoded core coder output signal; and
- adding the adjusted background noise to the current frame, to perform a noise filling.

16. A computer program for performing a method according to claim 15, **wherein** the computer program runs on a computer.

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