Claims

1. Context-based entropy decoder for decoding sample values ~~(12)~~ of a spectral envelope ~~(10)~~ of an audio signal, configured to

spectrotemporally predict ~~(42)~~ a current sample value of the spectral envelope to obtain an estimated value of the current sample value;

determine ~~(44)~~ a context for the current sample value dependent on a measure for a deviation between a pair of already decoded sample values of the spectral envelope in a spectrotemporal neighborhood of the current sample value;

entropy decode ~~(46)~~ a prediction residual value of the current sample value using the context determined; and

combine ~~(48)~~ the estimated value and the prediction residual value to obtain the current sample value.

2. Context-based entropy decoder according to claim 1, further configured to perform the spectrotemporal prediction by linear prediction.

3. Context-based entropy decoder according to claim 1 or 2, further configured to use a signed difference between the pair of already decoded sample values of the spectral envelope in the spectrotemporal neighborhood of the current sample value as to measure the deviation.

4. Context-based entropy decoder according to any of the previous claims, further configured to determine the context for the current sample value dependent on a first measure for a deviation between a first pair of already decoded sample values of the spectral envelope in the spectrotemporal neighborhood of the current sample value and a second measure for a deviation between a second pair of already decoded sample values of the spectral envelope in the spectrotemporal neighborhood of the current sample value, with the first pair neighboring each other spectrally, and the second pair neighboring each other temporally.

5. Context-based entropy decoder according to claim 4, further configured to spectrotemporally predict the current sample value of the spectral envelope by linearly combining the already decoded sample values of the first and second pairs.

6. Context-based entropy decoder according to claim 5, further configured to set factors of the linear combination so that the factors are the same for different contexts, in case of the bitrate at which the audio signal is coded being greater than a predetermined threshold, and the factors are set individually for the different contexts, in case of the bitrate being lower than the predetermined threshold.

7. Context-based entropy decoder according to any of the previous claims, further configured to, in decoding the sample values of the spectral envelope, sequentially decode the sample values using a decoding order ~~(30)~~ which traverses the sample values time instant by instant with, in each time instant, leading from lowest to highest frequency.

8. Context-based entropy decoder according to any of the previous claims, further configured to, in determining the context, quantize the measure for the deviation and determine the context using the quantized measure.

9. Context-based entropy decoder according to claim 8, further configured to use a quantization function ~~(32)~~ in the quantization of the measure for the deviation, which is constant for values of the measure for the deviation outside a predetermined interval ~~(34)~~, the predetermined interval including zero.

10. Context-based entropy decoder according to claim 9, wherein the values of the spectral envelope are represented as integer numbers and the length of the predetermined interval ~~(34)~~ is smaller than, or equal to, 1/16 of the number of representable states of an integer representation of the values of the spectral envelope.

11. Context-based entropy decoder according to any of the previous claims, further configured to transfer ~~(50)~~ the current sample value, as derived by the combination, from a logarithmic domain to a linear domain.

12. Context-based ~~adaptive~~ entropy decoder according to any of the previous claims, the context-based entropy decoder managing a number of contexts, each context having a probability distribution associated therewith which assigns to each possible value of the prediction residual value a respective probability, wherein the context-based entropy decoder is further configured to, in entropy decoding the residual values, sequentially decode the sample values along a decoding order and use a set of context-individual probability distributions, which is constant during sequentially decoding the sample values of a spectral envelope.

13. Context-based entropy decoder according to any of the previous claims, further configured to, in entropy decoding the residual value, use an escape coding mechanism in case the residual value is outside a predetermined value range ~~(68)~~.

14. Context-based entropy decoder according to claim 13, wherein the sample values of the spectral envelope are represented as integer numbers, and the prediction residual is represented as an integer number, and absolute values of interval bounds ~~(70, 72)~~ of the predetermined value range are lower than, or equal to, 1/8 of the number of representable states of the prediction residual value.

15. Parametric decoder comprising:

a context-based entropy decoder ~~(40)~~ for decoding sample values of a spectral envelope of an audio signal according to any of the previous claims;

a fine structure determiner ~~(82)~~ configured to receive spectral line values ~~(160)~~ from a data stream arranged, spectrally, in spectral line pitch so as to determine a fine structure of a spectrogram of the audio signal; and

a spectral shaper ~~(84)~~ configured to shape the fine structure according to the spectral envelope.

16. Parametric decoder according to claim 15, wherein the fine structure determiner is configured to determine the fine structure of the spectrogram using at least one of

artificial random noise generation,

spectral regeneration, and

spectral-line wise decoding using spectral prediction and/or spectral entropy-context derivation.

17. Parametric decoder according to claim 15 or 16, further comprising a lower frequency interval decoder (94) configured to decode a lower frequency interval (98) of the audio signal's spectrogram, wherein the context-based entropy coder, the fine structure determiner and the spectral shaper are configured such that the shaping of the fine structure according to the spectral envelope is performed within a spectral higher frequency extension (18) of the lower frequency interval.

18. Parametric decoder according to claim 17, wherein the lower frequency interval decoder (94) is configured to determine the fine structure of the spectrogram using

spectral-line wise decoding using spectral prediction and/or spectral entropy-context derivation or

using spectral decomposition of a decoded time-domain low-frequency band audio signal.

19. Parametric decoder according to claim 15 or 16, wherein the fine structure determiner is configured to use spectral-line wise decoding using spectral prediction and/or spectral entropy-context derivation so as to derive the fine structure of the spectrogram of the audio signal within a first frequency interval (130), locate zero-quantized portions (142) of the fine structure within a second frequency interval (18) overlapping the first frequency interval and apply artificial random noise generation and/or spectral regeneration onto the zero-quantized portions (142), wherein the spectral shaper (84) is configured to perform the shaping of the fine structure according to the spectral envelope at the zero-quantized portions (142).

20. Context-based entropy encoder for encoding sample values of a spectral envelope of an audio signal, configured to

spectrotemporally predict a current sample value of the spectral envelope to obtain an estimated value of the current sample value;

determine a context for the current sample value dependent on a measure for a deviation between a pair of already decoded sample values of the spectral envelope in a spectrotemporal neighborhood of the current sample value;

determine a prediction residual value based on a deviation between the estimated value and the current sample value; and

entropy encode the prediction residual value of the current sample value using the context determined.

21. Method for, using context-based entropy decoding, decoding sample values of a spectral envelope of an audio signal, comprising

spectrotemporally predict a current sample value of the spectral envelope to obtain an estimated value of the current sample value;

determine a context for the current sample value dependent on a measure for a deviation between a pair of already decoded sample values of the spectral envelope in a spectrotemporal neighborhood of the current sample value;

entropy decode a prediction residual value of the current sample value using the context determined; and

combine the estimated value and the prediction residual value to obtain the current sample value.

22. Method for, using context-based entropy encoding, encoding sample values of a spectral envelope of an audio signal, comprising

spectrotemporally predict a current sample value of the spectral envelope to obtain an estimated value of the current sample value;

determine a context for the current sample value dependent on a measure for a deviation between a pair of already decoded sample values of the spectral envelope in a spectrotemporal neighborhood of the current sample value;

determine a prediction residual value based on a deviation between the estimated value and the current sample value; and

entropy encode the prediction residual value of the current sample value using the context determined.

23. Computer program having a program code for performing, when running on a computer, a method according to claim 21 or 22.