Claims

1. A multi-channel audio decoder (200; 300; 700; 800) for providing at least two output audio signals (212, 214; 312, 314; 712, 714) on the basis of an encoded representation (210; 310; 710),

wherein the multi-channel audio decoder is configured to perform a weighted combination (220; 780, 790, 792) of a downmix signal (222; 752, 754), a decorrelated signal (224; 756,758) and a residual signal (226; 760, 762; res), to obtain one of the output audio signals (212,214; 712, 714),

wherein the multi-channel audio decoder is configured to determine a weight (232; r; r_{dec}) describing a contribution of the decorrelated signal in the weighted combination in dependence on the residual signal;

wherein the multi-channel audio decoder is configured to determine the weight describing the contribution of the decorrelated signal in the weighted combination in dependence on the decorrelated signal.

2. The multi-channel audio decoder according to claim 1, wherein the multi-channel audio decoder is configured to obtain upmix parameters ($u_{dmx,1}$; $u_{dmx,2}$; $u_{dec,1}$; $u_{dec,2}$; $u_{r,1}$; $u_{r,2}$) on the basis of the encoded representation, and to determine the weight (232; r; r_{dec}) describing the contribution of the decorrelated signal in the weighted combination in dependence on the upmix parameters.

3. The multi-channel audio decoder according to one of claims 1 to 2, wherein the multi-channel audio decoder is configured to determine the weight (232; r; r_{dec}) describing in the contribution of the decorrelated signal in the weighted combination such that the weight of the decorrelated signal decreases with increasing energy of the residual signal.

4. The multi-channel audio decoder according to one of claims 1 to 3, wherein the multi-channel audio decoder is configured to determine the weight (232; r; r_{dec}) describing the contribution of the decorrelated signal in the weighted combination such that a maximum weight, which is determined by a decorrelated signal upmix parameter ($u_{dec,1}$; $u_{dec,2}$; u_{dec}(hb,ts,ch); u_{dec}(ch,ts)), is associated to the decorrelated signal if an energy of the residual signal is zero, and such that a zero weight is associated to the decorrelated signal if an energy of the residual signal weighted with a residual signal weighting coefficient ($u_{r,1}$; $u_{r,2}$; u_{res}(hb,ts.ch); u_{res}(ch,ts)) is larger than or equal to an energy of the decorrelated signal, weighted with the decorrelated signal upmix parameter.

5. The multi-channel audio decoder according to one of claims 1 to 4, wherein the multi-channel audio decoder is configured to compute a weighted energy value (E_{dec}(hb); E_{dec}) of the decorrelated signal, weighted in dependence on one or more decorrelated signal upmix parameters, and to compute a weighted energy value (E_{res}(hb); E_{res}) of the residual signal, weighted using one or more residual signal upmix parameters, to determine a factor (r; r_{dec}) in dependence on the weighted energy value of the decorrelated signal and the weighted energy value of the residual signal, and to obtain the weight describing the contribution of the decorrelated signal to one of the output audio signals on the basis of the factor or to use the factor as the weight describing the contribution of the decorrelated signal to one of the output audio signals.

6. The multi-channel audio decoder according to claim 5, wherein the multi-channel audio decoder is configured to multiply the factor (r) with a decorrelated signal upmix parameter ($u_{dec,1}$; $u_{dec,2}$; u_{dec}(hb,ts,ch); u_{dec}(ch,ts)), to obtain the weight describing the contribution of the decorrelated signal to one of the output audio signals.

7. The multi-channel audio decoder according to claim 5 or claim 6, wherein the multi-channel audio decoder is configured to compute the energy of the decorrelated signal, weighted using decorrelated signal upmix parameters, over a plurality of upmix channels (ch) and time slots (ts), to obtain the weighted energy value ($E_{dec}(hb)$; E_{dec}) of the decorrelated signal.

8. The multi-channel audio decoder according to one of claims 5 to 7, wherein the multi-channel audio decoder is configured to compute the energy of the residual signal, weighted using residual signal upmix parameters, over a plurality of upmix channels (ch) and time slots (ts), to obtain the weighted energy value ($E_{res}(hb)$; E_{res}) of the residual signal.

9. The multi-channel audio decoder according to one of claims 5 to 8, wherein the multi-channel audio decoder is configured to compute the factor (r; r_{dec}) in dependence on a difference between the weighted energy value ($E_{dec}(hb)$; E_{dec}) of the decorrelated signal and the weighted energy value ($E_{res}(hb)$; E_{res}) of the residual signal.

10. The multi-channel audio decoder according to claim 9, wherein the multi-channel audio decoder is configured to compute the factor (r; r_{dec}) in dependence on a ratio between

- a difference between the weighted energy value of the decorrelated signal and the weighted energy value of the residual signal, and

- the weighted energy value of the decorrelated signal.

11. The multi-channel audio decoder according to one of claims 5 to 10, wherein the multi-channel audio decoder is configured to determine weights describing contributions of the decorrelated signal to two or more output audio signals,

wherein the multi-channel audio decoder is configured to determine a contribution of the decorrelated signal to a first output audio signal on the basis of the weighted energy value ~~($E_{dec}(hb); E_{dec}$)~~ of the decorrelated signal and a first-channel decorrelated signal upmix parameter ~~($u_{dec,1}$)~~, and

wherein the multi-channel audio decoder is configured to determine a contribution of the decorrelated signal to a second output audio channel on the basis of the weighted energy value ~~($E_{dec}(hb); E_{dec}$)~~ of the decorrelated signal and a second-channel decorrelated signal upmix parameter ~~($u_{dec,2}$)~~.

12. The multi-channel audio decoder according to one of claims 1 to 11, wherein the multi-channel audio decoder is configured to disable a contribution of the decorrelated signal to the weighted combination if a residual energy ~~($E_{res}(hb); E_{res}$)~~ exceeds a decorrelator energy ~~($E_{dec}(hb); E_{dec}$)~~.

13. The multi-channel audio decoder according to one of claims 1 to 12, wherein the multi-channel audio decoder is configured to compute two output audio signals ch1, ch2 according to

$$\begin{pmatrix} \mathrm{ch}_1 \\ \mathrm{ch}_2 \end{pmatrix} = \begin{bmatrix} u_{\mathrm{dmx},1} & r \cdot u_{\mathrm{dec},1} & \max\{u_{\mathrm{dmx},1}, 0.5\} \\ u_{\mathrm{dmx},2} & r \cdot u_{\mathrm{dec},2} & -\max\{u_{\mathrm{dmx},2}, 0.5\} \end{bmatrix} \cdot \begin{pmatrix} x_{\mathrm{dmx}} \\ x_{\mathrm{dec}} \\ x_{\mathrm{res}} \end{pmatrix}$$

wherein ch1 represents one or more time domain samples or transform domain samples of a first output audio signal,

wherein ch2 represents one or more time domain samples or transform domain samples of a second output audio signal,

wherein x_{dmx} represents one or more time domain samples or transform domain samples of a downmix signal;

wherein x_{dec} represents one or more time domain samples or transform domain samples of a decorrelated signal;

wherein x_{res} represents one or more time domain samples or transform domain samples of a residual signal;

wherein $u_{dmx,1}$ represents a downmix signal upmix parameter for the first output audio signal;

wherein $u_{dmx,2}$ represents a downmix signal upmix parameter for the second output audio signal;

wherein $u_{dec,1}$ represents a decorrelated signal upmix parameter for the first output audio signal;

wherein $u_{dec,2}$ represents a decorrelated signal upmix parameter for the second output audio signal;

wherein max represents a maximum operator; and

wherein r represents a factor describing a weighting of the decorrelated signal in dependence on the residual signal.

14. The multi-channel audio decoder according to claim 13, wherein the multi-channel audio decoder is configured to compute the factor r according to

$$r = \sqrt{\left| \frac{E_{\mathrm{dec}}(\mathrm{hb}) - E_{\mathrm{res}}(\mathrm{hb})}{E_{\mathrm{dec}}(\mathrm{hb})} \right|}$$

or according to

$$r = \begin{cases} 0 & if \quad E_{res} > E_{dec} \\ 1 & if \quad E_{res} < \varepsilon \\ \sqrt{\left| \frac{E_{dec} - E_{res} + \varepsilon}{E_{dec} + \varepsilon} \right|} & else \end{cases}$$

wherein $E_{dec}(hb)$ or E_{dec} represents a weighted energy value of the decorrelated signal x_{dec} for a frequency band hb, and

wherein $E_{res}(hb)$ or E_{res} represents a weighted energy value of the residual signal x_{res} for a frequency band hb.

15. The multi-channel audio decoder according claim 14, wherein the multi-channel audio decoder is configured to compute the weighted energy value of the decorrelated signal according to

$$E_{\mathrm{dec}}(\mathrm{hb}) = \sum_{\mathrm{ch}} \sum_{\mathrm{ts}} \| u_{\mathrm{dec}}(\mathrm{hb}, \mathrm{ts}, \mathrm{ch}) \cdot x_{\mathrm{dec}}(\mathrm{hb}, \mathrm{ts}, \mathrm{ch}) \|$$

wherein u_{dec} designates a decorrelated signal upmix parameter for a frequency band hb, for a time slot ts and for an upmix channel ch,

wherein x_{dec} represents a time domain sample or transform domain sample of a decorrelated signal for a frequency band hb, for a time slot ts and for an upmix channel ch,

wherein $\sum_{ch}$ designates a sum over upmix channels ch, and

wherein $\sum_{ts}$ designates a sum over time slots ts,

wherein ||. || designates a norm operator,

wherein the multi-channel audio decoder is configured to compute the weighted energy value of the residual signal according to the

$$E_{\mathrm{res}}(\mathrm{hb}) = \sum_{\mathrm{ch}} \sum_{\mathrm{ts}} \|u_{\mathrm{res}}(\mathrm{hb}, \mathrm{ts}, \mathrm{ch}) \cdot x_{\mathrm{res}}(\mathrm{hb}, \mathrm{ts}, \mathrm{ch})\|$$

wherein u_{res} designates a residual signal upmix parameter for a frequency band hb, for a time slot ts and for an upmix channel ch,

wherein x_{res} represents a time domain sample or transform domain sample of a decorrelated signal for a frequency band hb, for a time slot ts and for an upmix channel ch.

16. The multi-channel audio decoder according one of claims 1 to 15, wherein the audio decoder is configured to band-wisely determine the weight ~~(232; r; r_{dec})~~ describing a contribution of the decorrelated signal in the weighted combination in dependence on a band-wise determination of weighted energy values of the residual signal.

17. The audio decoder according to one of claims 1 to 16, wherein the audio decoder is configured to determine the weight describing a contribution of the decorrelated signal in the weighted combination for each frame of the output audio signals.

18. The audio decoder according to one of claims 1 to 17, wherein the multi-channel audio decoder is configured to variably adjust a weight describing a contribution of the residual signal in the weighted combination.

19. A multi-channel audio decoder ~~(200; 300; 700; 800)~~ for providing at least two output audio signals ~~(212, 214; 312, 314; 712, 714)~~ on the basis of an encoded representation ~~(210; 310; 710)~~,

wherein the multi-channel audio decoder is configured to obtain one of the output audio signals on the basis of an encoded representation of a downmix signal ~~(222; 722)~~, a plurality of encoded spatial parameters ~~(726)~~ and an encoded representation of a residual signal ~~(226; 724)~~, and

wherein the multi-channel audio decoder is configured to blend between a parametric coding and a residual coding in dependence on the residual signal,

such that an intensity of the residual signal determines whether the decoding is mostly based on the spatial parameters in addition to the downmix signal, or

whether the decoding is mostly based on the residual signal in addition to the downmix signal, or whether an intermediate state is taken in which both the spatial parameters and the residual signal affect a refinement of the output signal, to derive the output audio signals from the downmix signal.

20. A multi-channel audio encoder (100) for providing an encoded representation (112) of a multi-channel audio signal (110),

wherein the multi-channel audio encoder is configured to obtain a downmix signal (122) on the basis of the multi-channel audio signal,

to provide parameters (124) describing dependencies between the channels of the multi-channel audio signal, and

to provide a residual signal (126),

wherein the multi-channel audio encoder is configured to vary an amount of residual signal included into the encoded representation in dependence on the multi-channel audio signal;

wherein the multi-channel audio encoder is configured to selectively include the residual signal into the encoded representation for frequency bands for which the multi-channel audio signal is tonal.

21. The multi-channel audio encoder according to claim 20, wherein the multi-channel audio encoder is configured to vary a bandwidth of the residual signal in dependence on the multi-channel audio signal.

22. The multi-channel audio encoder according to claim 20 or claim 21,

wherein the multi-channel audio encoder is configured to select frequency bands for which the residual signal is included into the encoded representation in dependence on the multi-channel audio signal.

23. The multi-channel audio encoder according to one of claims 20 to 22,

wherein the multi-channel audio encoder is configured to selectively include the residual signal into the encoded representation for time portions and/or for frequency bands in which the formation of the downmix signal results in a cancelation of signal components of the multi-channel audio signal.

24. The multi-channel audio encoder according to claim 23,

wherein the multi-channel audio encoder is configured to detect a cancelation of signal components of the multi-channel audio signal in the downmix signal, and wherein the multi-channel audio encoder is configured to activate the provision of the residual signal in response to the result of the detection.

25. The multi-channel audio encoder according to one of claims 20 to 24,

wherein the multi-channel audio encoder is configured to compute the residual signal using a linear combination of at least two channel signals of the multi-channel audio signal and in dependence on upmix coefficients to be used at a side of a multi-channel decoder.

26. The multi-channel audio encoder according to claim 25, wherein the multi-channel audio encoder is configured to determine and encode the upmix coefficients,

or to derive the upmix coefficients from the parameters describing dependencies between the channels of the multi-channel audio signal.

27. The multi-channel audio encoder according to one of claims 20 to 26,

wherein the multi-channel audio encoder is configured to time-variantly determine the amount of residual signal included into the encoded representation using a psychoacoustic model.

28. The multi-channel audio encoder according to one of claims 20 to 27,

wherein the multi-channel audio encoder is configured to time-variantly determine the amount of residual signal included into the encoded representation in dependence on a currently available bitrate.

29. A method ~~(500)~~ for providing at least two output audio signals on the basis of an encoded representation, the method comprising:

performing ~~(520)~~ a weighted combination of a downmix signal, a decorrelated signal and a residual signal, to obtain one of the output audio signals,

wherein a weight describing a contribution of the decorrelated signal in the weighted combination is determined ~~(510)~~ in dependence on the residual signal;

wherein the weight describing the contribution of the decorrelated signal in the weighted combination is determined in dependence on the decorrelated signal.

30. A method ~~(600)~~ for providing at least two output audio signals on the basis of an encoded representation, the method comprising:

obtaining ~~(610)~~ one of the output audio signals on the basis of an encoded representation of a downmix signal, a plurality of encoded spatial parameters and an encoded representation of a residual signal,

wherein a blending is performed ~~(620)~~ between a parametric coding and a residual coding in dependence on the residual signa,

such that an intensity of the residual signal determines whether the decoding is mostly based on the spatial parameters in addition to the downmix signal, or whether the decoding is mostly based on the residual signal in addition to the downmix signal, or whether an intermediate state is taken in which both the spatial parameters and the residual signal affect a refinement of the output signal, to derive the output audio signals from the downmix signall.

31. A method ~~(400)~~ for providing an encoded representation of a multi-channel audio signal, comprising:

obtaining ~~(410)~~ a downmix signal on the basis of the multi-channel audio signal,

providing ~~(420)~~ parameters describing dependencies between the channels of the multi-channel audio signal; and

providing ~~(430)~~ a residual signal;

wherein an amount of residual signal included into the encoded representation is varied ~~(440)~~ in dependence on the multi-channel audio signal;

wherein the residual signal is selectively included into the encoded representation for frequency bands for which the multi-channel audio signal is tonal.

32. A computer program for performing the method according to claim 29, 30 or 31 when the computer program runs on a computer.

33. A multi-channel audio decoder ~~(200; 300; 700; 800)~~ for providing at least two output audio signals ~~(212, 214; 312, 314; 712, 714)~~ on the basis of an encoded representation ~~(210; 310; 710)~~,

wherein the multi-channel audio decoder is configured to perform a weighted combination ~~(220; 780, 790, 792)~~ of a downmix signal ~~(222; 752, 754)~~, a decorrelated signal ~~(224; 756,758)~~ and a residual signal ~~(226; 760, 762; res)~~, to obtain one of the output audio signals ~~(212,214; 712, 714)~~,

wherein the multi-channel audio decoder is configured to determine a weight ~~(232; r; r_{dec})~~ describing a contribution of the decorrelated signal in the weighted combination in dependence on the residual signal;

wherein the multi-channel audio decoder is configured to compute a weighted energy value ($E_{dec}(hb)$; E_{dec}) of the decorrelated signal, weighted in dependence on one or more decorrelated signal upmix parameters, and to compute a weighted energy value ($E_{res}(hb)$; E_{res}) of the residual signal, weighted using one or more residual signal upmix parameters, to determine a factor (r; r_{dec}) in dependence on the weighted energy value of the decorrelated signal and the weighted energy value of the residual signal, and to obtain the weight describing the contribution of the decorrelated signal to one of the output audio signals on the basis of the factor or to use the factor as the weight describing the contribution of the decorrelated signal to one of the output audio signals.

34. A multi-channel audio decoder (200; 300; 700; 800) for providing at least two output audio signals (212, 214; 312, 314; 712, 714) on the basis of an encoded representation (210; 310; 710),

wherein the multi-channel audio decoder is configured to perform a weighted combination (220; 780, 790, 792) of a downmix signal (222; 752, 754), a decorrelated signal (224; 756,758) and a residual signal (226; 760, 762; res), to obtain one of the output audio signals (212,214; 712, 714),

wherein the multi-channel audio decoder is configured to determine a weight (232; r; r_{dec}) describing a contribution of the decorrelated signal in the weighted combination in dependence on the residual signal;

wherein the multi-channel audio decoder is configured to compute two output audio signals ch1, ch2 according to

$$\begin{pmatrix} \mathrm{ch}_1 \\ \mathrm{ch}_2 \end{pmatrix} = \begin{bmatrix} u_{\mathrm{dmx},1} & r \cdot u_{\mathrm{dec},1} & \max\{u_{\mathrm{dmx},1}, 0.5\} \\ u_{\mathrm{dmx},2} & r \cdot u_{\mathrm{dec},2} & -\max\{u_{\mathrm{dmx},2}, 0.5\} \end{bmatrix} \cdot \begin{pmatrix} x_{\mathrm{dmx}} \\ x_{\mathrm{dec}} \\ x_{\mathrm{res}} \end{pmatrix}$$

wherein ch1 represents one or more time domain samples or transform domain samples of a first output audio signal,

wherein ch2 represents one or more time domain samples or transform domain samples of a second output audio signal,

wherein x_{dmx} represents one or more time domain samples or transform domain samples of a downmix signal;

wherein x_{dec} represents one or more time domain samples or transform domain samples of a decorrelated signal;

wherein x_{res} represents one or more time domain samples or transform domain samples of a residual signal;

wherein $u_{dmx,1}$ represents a downmix signal upmix parameter for the first output audio signal;

wherein $u_{dmx,2}$ represents a downmix signal upmix parameter for the second output audio signal;

wherein $u_{dec,1}$ represents a decorrelated signal upmix parameter for the first output audio signal;

wherein $u_{dec,2}$ represents a decorrelated signal upmix parameter for the second output audio signal;

wherein max represents a maximum operator; and

wherein r represents a factor describing a weighting of the decorrelated signal in dependence on the residual signal.

35. A multi-channel audio encoder ~~(100)~~ for providing an encoded representation ~~(112)~~ of a multi-channel audio signal ~~(110)~~,

wherein the multi-channel audio encoder is configured to obtain a downmix signal ~~(122)~~ on the basis of the multi-channel audio signal,

to provide parameters ~~(124)~~ describing dependencies between the channels of the multi-channel audio signal, and

to provide a residual signal ~~(126)~~,

wherein the multi-channel audio encoder is configured to vary an amount of residual signal included into the encoded representation in dependence on the multi-channel audio signal;

wherein the multi-channel audio encoder is configured to selectively include the residual signal into the encoded representation for time portions and/or for

frequency bands in which the formation of the downmix signal results in a cancelation of signal components of the multi-channel audio signal.

36. A multi-channel audio encoder ~~(100)~~ for providing an encoded representation ~~(112)~~ of a multi-channel audio signal ~~(110)~~,

wherein the multi-channel audio encoder is configured to obtain a downmix signal ~~(122)~~ on the basis of the multi-channel audio signal,

to provide parameters ~~(124)~~ describing dependencies between the channels of the multi-channel audio signal, and

to provide a residual signal ~~(126)~~,

wherein the multi-channel audio encoder is configured to vary an amount of residual signal included into the encoded representation in dependence on the multi-channel audio signal;

wherein the multi-channel audio encoder is configured to time-variantly determine the amount of residual signal included into the encoded representation in dependence on a currently available bitrate.

37. A method ~~(500)~~ for providing at least two output audio signals on the basis of an encoded representation, the method comprising:

performing ~~(520)~~ a weighted combination of a downmix signal, a decorrelated signal and a residual signal, to obtain one of the output audio signals,

wherein a weight describing a contribution of the decorrelated signal in the weighted combination is determined ~~(510)~~ in dependence on the residual signal;

wherein the method comprises computing a weighted energy value ~~($E_{dec}(hb)$; E_{dec})~~ of the decorrelated signal, weighted in dependence on one or more decorrelated signal upmix parameters, and computing a weighted energy value ~~($E_{res}(hb)$; E_{res})~~ of the residual signal, weighted using one or more residual signal upmix parameters, and determining a factor ~~(r; r_{dec})~~ in dependence on the weighted energy value of the decorrelated signal and the weighted energy value of the residual signal, and obtaining the weight describing the contribution of the decorrelated signal to one of the output audio signals on the basis of the factor or using the factor as the weight describing the contribution of the decorrelated signal to one of the output audio signals.

38. A method ~~(500)~~ for providing at least two output audio signals on the basis of an encoded representation, the method comprising:

performing ~~(520)~~ a weighted combination of a downmix signal, a decorrelated signal and a residual signal, to obtain one of the output audio signals,

wherein a weight describing a contribution of the decorrelated signal in the weighted combination is determined ~~(510)~~ in dependence on the residual signal;

wherein the method comprises computing two output audio signals ch1, ch2 according to

$$\begin{pmatrix} \mathrm{ch}_1 \\ \mathrm{ch}_2 \end{pmatrix} = \begin{bmatrix} u_{\mathrm{dmx},1} & r \cdot u_{\mathrm{dec},1} & \max\{u_{\mathrm{dmx},1}, 0.5\} \\ u_{\mathrm{dmx},2} & r \cdot u_{\mathrm{dec},2} & -\max\{u_{\mathrm{dmx},2}, 0.5\} \end{bmatrix} \cdot \begin{pmatrix} x_{\mathrm{dmx}} \\ x_{\mathrm{dec}} \\ x_{\mathrm{res}} \end{pmatrix}$$

wherein ch1 represents one or more time domain samples or transform domain samples of a first output audio signal,

wherein ch2 represents one or more time domain samples or transform domain samples of a second output audio signal,

wherein x_{dmx} represents one or more time domain samples or transform domain samples of a downmix signal;

wherein x_{dec} represents one or more time domain samples or transform domain samples of a decorrelated signal;

wherein x_{res} represents one or more time domain samples or transform domain samples of a residual signal;

wherein $u_{dmx,1}$ represents a downmix signal upmix parameter for the first output audio signal;

wherein $u_{dmx,2}$ represents a downmix signal upmix parameter for the second output audio signal;

wherein $u_{dec,1}$ represents a decorrelated signal upmix parameter for the first output audio signal;

wherein $u_{dec,2}$ represents a decorrelated signal upmix parameter for the second output audio signal;

wherein max represents a maximum operator; and

wherein r represents a factor describing a weighting of the decorrelated signal in dependence on the residual signal.

39. A method ~~(400)~~ for providing an encoded representation of a multi-channel audio signal, comprising:

obtaining ~~(410)~~ a downmix signal on the basis of the multi-channel audio signal,

providing ~~(420)~~ parameters describing dependencies between the channels of the multi-channel audio signal; and

providing ~~(430)~~ a residual signal;

wherein an amount of residual signal included into the encoded representation is varied ~~(440)~~ in dependence on the multi-channel audio signal;

wherein the method comprises selectively including the residual signal into the encoded representation for time portions and/or for frequency bands in which the formation of the downmix signal results in a cancelation of signal components of the multi-channel audio signal.

40. A method ~~(400)~~ for providing an encoded representation of a multi-channel audio signal, comprising:

obtaining ~~(410)~~ a downmix signal on the basis of the multi-channel audio signal,

providing ~~(420)~~ parameters describing dependencies between the channels of the multi-channel audio signal; and

providing ~~(430)~~ a residual signal;

wherein an amount of residual signal included into the encoded representation is varied ~~(440)~~ in dependence on the multi-channel audio signal;

wherein the method comprises time-variantly determining the amount of residual signal included into the encoded representation in dependence on a currently available bitrate.

41. A computer program for performing the method according to claim 37, 38, 39 or 40 when the computer program runs on a computer