Claims

1. A multi-channel audio encoder for providing an encoded audio representation on the basis of an input audio representation,

wherein the multi-channel audio encoder is configured to switch between a parametric multi-channel encoding of a plurality of channels and an individual encoding of a plurality of channels in dependence on characteristics of the input audio representation;

wherein the multi-channel audio encoder is configured to determine one or more multi-channel encoding parameters;

wherein the multi-channel encoder is configured to determine whether there is a single dominant source in a plurality of time-frequency portions, or whether there are two or more sources in a given time frequency portion, multi-channel encoding parameters of which differ at least by a predetermined deviation or by more than a predetermined deviation, and to switch in dependence on the determination whether the multi-channel encoding parameters differ at least by the predetermined deviation or by more than the predetermined deviation;

wherein the multi-channel encoding parameters are based on a relationship between channels of the input audio representation; and

wherein the multi-channel audio encoder is configured to switch to the parametric multi-channel encoding in the case of a single source, and to switch to the individual encoding in case of two or more sources in the given time-frequency portion, multi-channel encoding parameters of which differ at least by the predetermined deviation.

2. The multi-channel encoder of claim 1, wherein

the multi-channel encoder is configured to determine whether the input audio representation fulfills an assumption of a model underlying the parametric multi-channel encoding and to switch in dependence on the determination.

3. The multi-channel encoder of claim 2, wherein

the multi-channel encoder is configured to switch to the individual encoding if the assumption of the model underlying the parametric multichannel encoding is not fulfilled.

4. The multi-channel encoder of any one of the preceding claims, wherein

the multi-channel encoder is configured to determine whether the input audio representation corresponds to a dominant source and to switch in dependence on the determination.

5. The multi-channel encoder of any one of the preceding claims, wherein

the multi-channel encoder is configured to determine whether there is a single dominant source in a plurality of time-frequency portions, and/or to determine whether there are two or more sources in a given time frequency portion, multi-channel encoding parameters of which differ at least by a predetermined deviation or by more than a predetermined deviation, and to switch in dependence on the determination.

6. The multi-channel encoder of any one of the preceding claims, wherein

the multi-channel encoder is configured to determine a parameter of a model underlying the parametric multi-channel encoding and to switch in dependence on the parameter of the model.

7. The multi-channel encoder of any one of the preceding claims, wherein

the multi-channel encoder is configured to determine whether a characteristic defining a relationship between channels of the input audio representation allows for an unambiguous determination of a multi-channel encoding parameter or indicates two or more different possible values of the multi-channel encoding parameter and to switch in dependence on the determination.

8. The multi-channel encoder of any one of the preceding claims, wherein

the multi-channel encoder is configured to determine whether a characteristic defining a relationship between channels of the input audio representation comprises only a single significant value, which fulfils a significance condition, or whether the characteristic defining the relationship between channels of the input audio representation comprises two or more significant values which fulfil the significance condition and to switch in dependence on the determination.

9. The multi-channel encoder of any one of the preceding claims, wherein

the multi-channel encoder is configured to determine a parameter of a previous frame and switch in dependence on the parameter of the previous frame.

10. The multi-channel encoder of any one of the preceding claims, wherein

the multi-channel encoder is configured to determine whether there are interfering sources in the input audio representation and to switch in dependence on the determination.

11. The multi-channel encoder of any one of the preceding claims, wherein

the multi-channel encoder is configured to determine whether there are two or more values describing a relationship between two or more channels of the input audio representation , which fulfill a significance condition and which are associated with a single time-frequency portion and to switch in dependence on the determination.

12. The multi-channel encoder of any one of the preceding claims, wherein

the multi-channel encoder is configured to determine whether there are two or more peaks in a cross-correlation between two or more channels of the input audio representation, and to switch in dependence on the determination.

13. The multi-channel encoder of any one of the preceding claims, wherein

the multi-channel encoder comprises an estimator configured to estimate a relationship between two or more channels of the input audio representation based on a cross-correlation, and

the multi-channel encoder is configured to determine whether a difference between two peak values associated with different cross-correlation lag is greater than a value and to switch in dependence on the determination.

14. The multi-channel encoder of any one of the preceding claims, wherein

the multi-channel encoder is configured to determine whether a distance between two or more values describing a relationship between two or more channels of the input audio representation , which fulfill a significance condition and which are associated with a same time-frequency portion, is greater than a value and to switch in dependence on the determination.

15. The multi-channel encoder of any one of the preceding claims, wherein

the multi-channel encoder is configured to determine a first characteristic value based on an evolution of a cross-correlation and switch in dependence on the determination.

16. The multi-channel encoder of any one of the preceding claims, wherein

the multi-channel encoder is configured to determine one or more subordinate characteristic values based on the evolution of the cross-correlation and to switch in dependence on the determination, and/or

wherein the multi-channel encoder is configured to determine whether there are one or more subordinate characteristic values based on the evolution of the cross correlation, and to switch in dependence on the determination.

17. The multi-channel encoder of any one of the preceding claims, wherein

the multi-channel encoder is configured to determine whether a main peak and one or more subordinate peaks fulfill a significance condition and switch in dependence on the determination, and/or

wherein the multi-channel encoder is configured to determine whether there are one or more subordinate peaks of the cross correlation which fulfil a relevance criterion and to switch in dependence on the determination .

18. The multi-channel encoder according to one of the preceding claims, wherein

the multi-channel encoder is configured to selectively consider a subordinate peak in a given frame of the input audio representation if there have been one or more corresponding subordinate peaks in one or more frames preceding the given frame.

19. The multi-channel encoder of any one of the preceding claims, wherein

the multi-channel encoder is configured to determine whether one or more characteristic values, which describe a relationship between two or more channels of the input audio representation fulfill a stability condition and switch in dependence on the determination.

20. The multi-channel encoder of any one of the preceding claims, wherein

the multi-channel encoder is configured to determine whether a noise condition is fulfilled for a number of frames and to selectively avoid switching if the noise condition is fulfilled.

21. The multi-channel encoder of any one of the preceding claims, wherein

the multi-channel encoder is configured to determine whether the significance condition and/or the stability condition for the characteristic value is fulfilled for a number of frames and to switch in dependence on the determination.

22. The multi-channel encoder of any one of the preceding claims, wherein

the multi-channel encoder is configured to determine whether a distance of the one or more subordinate peaks is in a predetermined range and to switch and/or to selectively avoid switching in dependence on the determination.

23. The multi-channel encoder of any one of the preceding claims, wherein

the multi-channel encoder is configured to selectively avoid a switching at or after a first frame after an inactive frame of the input audio representation, and/or

the multi-channel encoder is configured to determine whether a given flag in a frame has changed relative to one or more previous frames and to selectively avoid switching in dependence on the determination.

24. The multi-channel encoder of any one of the preceding claims, wherein

the multi-channel encoder is configured to selectively switch to the individual encoding in response to a detection of a change of a characteristic of the input audio representation which is larger than a threshold.

25. The multi-channel encoder of any one of the preceding claims, wherein

the multi-channel encoder is configured determine whether a parameter describing a direction of a sound source has changed by at least a value and to switch in dependence on the determination,

wherein the multi-channel audio encoder is configured to switch to an individual encoding if a sound source moves rapidly.

26. A method of multi-channel audio encoding for providing an encoded audio representation on the basis of an input audio representation, the method comprising

switching between a parametric multi-channel encoding of a plurality of channels and an individual encoding of a plurality of channels in dependence on characteristics of the input audio representation

wherein the method comprises determining whether there is a single dominant source in a plurality of time-frequency portions, or whether there are two or more sources in a given time frequency portion, multi-channel encoding parameters of which differ at least by a predetermined deviation or by more than a predetermined deviation, and switching in dependence on the determination whether the multi-

channel encoding parameters differ at least by the predetermined deviation or by more than the predetermined deviation;

wherein the multi-channel encoding parameters are based on a relationship between channels of the input audio representation; and

wherein the method comprises switching to the parametric multi-channel encoding in the case of a single source, and to switch to the individual encoding in case of two or more sources in the given time-frequency portion, multi-channel encoding parameters of which differ at least by the predetermined deviation.

27. A computer program for performing the method of claim 26, when the computer program runs on a computer.

28. A multi-channel audio encoder for providing an encoded audio representation on the basis of an input audio representation,

wherein the multi-channel audio encoder is configured to switch between a parametric multi-channel encoding of a plurality of channels and an individual encoding of a plurality of channels in dependence on characteristics of the input audio representation;

wherein the multi-channel encoder is configured to determine whether a characteristic defining a relationship between channels of the input audio representation comprises only a single significant value, which fulfils a significance condition, or whether the characteristic defining the relationship between channels of the input audio representation comprises two or more significant values which fulfil the significance condition and to switch in dependence on the determination,

wherein determining whether the characteristic comprises only a single significant value or whether the characteristic comprises two or more significant values allows for deciding which encoding, the parametric multi-channel encoding or the individual encoding, is more suitable for the given input audio representation.

29. A multi-channel audio encoder for providing an encoded audio representation on the basis of an input audio representation,

wherein the multi-channel audio encoder is configured to switch between a parametric multi-channel encoding of a plurality of channels and an individual encoding of a plurality of channels in dependence on characteristics of the input audio representation;

wherein the multi-channel encoder is configured to determine whether there are two or more values describing a relationship between two or more channels of the input audio representation, which fulfill a significance condition and which are associated with a single time-frequency portion and to switch between the parametric multi-channel encoding and the individual encoding of a plurality of channels in dependence on the determination.

30. A multi-channel audio encoder for providing an encoded audio representation on the basis of an input audio representation,

wherein the multi-channel audio encoder is configured to switch between a parametric multi-channel encoding of a plurality of channels and an individual encoding of a plurality of channels in dependence on characteristics of the input audio representation;

wherein the multi-channel encoder is configured to determine whether there are two or more peaks in a cross-correlation between two or more channels of the input audio representation, and to switch in dependence on the determination,

wherein the cross-correlation relates to a given time-frequency portion, and

wherein the multi-channel audio encoder is configured to switch to the individual encoding upon determination that there are two or more peaks.

31. A multi-channel audio encoder for providing an encoded audio representation on the basis of an input audio representation,

wherein the multi-channel audio encoder is configured to switch between a parametric multi-channel encoding of a plurality of channels and an individual encoding of a plurality of channels in dependence on characteristics of the input audio representation;

wherein the multi-channel encoder comprises an estimator configured to estimate a relationship between two or more channels of the input audio representation based on a cross-correlation, and

the multi-channel encoder is configured to determine whether a difference between two peak values associated with different cross-correlation lag is greater than a value and to switch in dependence on the determination.

32. A multi-channel audio encoder for providing an encoded audio representation on the basis of an input audio representation,

wherein the multi-channel audio encoder is configured to switch between a parametric multi-channel encoding of a plurality of channels and an individual encoding of a plurality of channels in dependence on characteristics of the input audio representation;

wherein the multi-channel encoder is configured to determine whether a distance between two or more values describing a relationship between two or more channels of the input audio representation , which fulfill a significance condition and which are associated with a same time-frequency portion, is greater than a value and to switch in dependence on the determination.

33. A multi-channel audio encoder for providing an encoded audio representation on the basis of an input audio representation,

wherein the multi-channel audio encoder is configured to switch between a parametric multi-channel encoding of a plurality of channels and an individual encoding of a plurality of channels in dependence on characteristics of the input audio representation;

wherein the multi-channel encoder is configured to determine whether a main peak and one or more subordinate peaks fulfill a significance condition and switch in dependence on the determination, and/or

wherein the multi-channel encoder is configured to determine whether there are one or more subordinate peaks of the cross correlation which fulfil a relevance criterion and to switch in dependence on the determination.

34. A multi-channel audio encoder for providing an encoded audio representation on the basis of an input audio representation,

wherein the multi-channel audio encoder is configured to switch between a parametric multi-channel encoding of a plurality of channels and an individual encoding of a plurality of channels in dependence on characteristics of the input audio representation;

wherein the multi-channel encoder is configured to determine whether one or more characteristic values, which describe a relationship between two or more channels of the input audio representation fulfill a stability condition and switch in dependence on the determination.

35. A multi-channel audio encoder for providing an encoded audio representation on the basis of an input audio representation,

wherein the multi-channel audio encoder is configured to switch between a parametric multi-channel encoding of a plurality of channels and an individual encoding of a plurality of channels in dependence on characteristics of the input audio representation;

wherein the multi-channel encoder is configured to determine whether a noise condition is fulfilled for a number of frames and to selectively avoid switching if the noise condition is fulfilled.

36. A multi-channel audio encoder for providing an encoded audio representation on the basis of an input audio representation,

wherein the multi-channel audio encoder is configured to switch between a parametric multi-channel encoding of a plurality of channels and an individual encoding of a plurality of channels in dependence on characteristics of the input audio representation;

wherein the multi-channel encoder is configured to selectively avoid a switching at or after a first frame after an inactive frame of the input audio representation, and/or

the multi-channel encoder is configured to determine whether a given flag in a frame has changed relative to one or more previous frames and to selectively avoid switching in dependence on the determination.

37. A multi-channel audio encoder for providing an encoded audio representation on the basis of an input audio representation,

wherein the multi-channel audio encoder is configured to switch between a parametric multi-channel encoding of a plurality of channels and an individual encoding of a plurality of channels in dependence on characteristics of the input audio representation;

wherein the multi-channel encoder is configured to selectively switch to the individual encoding in response to a detection of a change of a characteristic of the input audio representation which is larger than a threshold;

wherein the characteristic of the input audio representation is an inter-channel time difference or a main peak of a cross-correlation between two or more channels of the input audio representation.

38. A multi-channel audio encoder for providing an encoded audio representation on the basis of an input audio representation,

wherein the multi-channel audio encoder is configured to switch between a parametric multi-channel encoding of a plurality of channels and an individual encoding of a plurality of channels in dependence on characteristics of the input audio representation;

wherein the multi-channel encoder is configured determine whether a parameter describing a direction of a sound source in the input audio representation has changed by at least a value and to switch in dependence on the determination.