Claims

1. A decoder ~~(110'')~~ for decoding an audio signal ~~(32)~~, the decoder ~~(110'')~~ comprising:

a first target spectrum generator ~~(65a)~~ for generating a first target spectrum ~~(85a'')~~ for a first time frame of a subband signal of the audio signal ~~(32)~~ using first correction data ~~(295a)~~;

a first phase corrector ~~(70a)~~ for correcting, with a first phase correction algorithm, a phase ~~(45)~~ of the subband signal in the first time frame of the audio signal ~~(32)~~, wherein the correction is performed by reducing, for the first time frame, a difference between a measure of the subband signal in the first time frame of the audio signal ~~(32)~~ and the first target spectrum ~~(85a'')~~;

an audio subband signal calculator ~~(350)~~ for calculating the audio subband signal ~~(355)~~ for the first time frame using a corrected phase ~~(91a)~~ determined by the first phase corrector for the first time frame;

a second target spectrum generator ~~(65b)~~, wherein the second target spectrum generator ~~(65b)~~ is configured for generating a second target spectrum ~~(85b'')~~ for the second time frame of the subband of the audio signal ~~(32)~~ using second correction data ~~(295b)~~;

a second phase corrector ~~(70b)~~ for correcting, with a second phase correction algorithm, a phase ~~(45)~~ of the subband signal in the second time frame of the audio signal ~~(32)~~, wherein the correction is performed by reducing, for the second time frame, a difference between a measure of the subband signal in the second time frame of the audio signal and the second target spectrum ~~(85b'')~~,

wherein the second phase correction algorithm is different from the first phase correction algorithm, and

wherein the audio subband signal calculator ~~(350)~~ is configured for calculating the audio subband signal ~~(355)~~ for the second time frame using a corrected phase ~~(91a)~~ determined by the second phase corrector for the second time frame.

2. The decoder ~~(110'')~~ according to claim 1, the decoder comprising:

a third target spectrum generator ~~(65c)~~, wherein the third target spectrum generator ~~(65c)~~ is configured for generating a third target spectrum for a third time frame of the subband of the audio signal ~~(32)~~ using third correction data ~~(295c)~~;

a third phase corrector ~~(70c)~~ for correcting ~~-~~, with a third phase correction algorithm, a phase ~~(45)~~ of the subband signal in the time frame of the audio signal ~~(32)~~ , wherein the correction is performed by reducing, for the third time frame a difference between a measure of the third time frame of the subband of the audio signal and the third target spectrum ~~(85c)~~;

wherein the audio subband signal calculator ~~(350)~~ is configured for further calculating the audio subband signal for the third time frame different from the first and the second time frame using the phase correction algorithm of the third phase corrector.

3. The decoder ~~(110'')~~ according to one of claims 1 - 2,

wherein the first phase corrector ~~(70a)~~ is configured for storing a phase-corrected subband signal ~~(91a)~~ of a previous time frame of the audio signal or for receiving a phase-corrected subband signal of the previous time frame ~~(375)~~ of the audio signal from a second phase corrector ~~(70b)~~ or a third phase corrector ~~(70c)~~;

wherein the first phase corrector ~~(70a)~~ is configured for correcting the phase ~~(45)~~ of the audio signal ~~(32)~~ in a current time frame of the audio subband signal based on the stored or the received phase-corrected subband signal of the previous time frame ~~(91a, 375)~~.

4. The decoder ~~(110'')~~ according to one of claims 1 - 3, wherein the first phase corrector ~~(70a)~~ performs a horizontal phase correction.

5. The decoder ~~(110'')~~ according to one of claims 1 - 4, wherein a second phase corrector ~~(70b)~~ performs a vertical phase correction.

6. The decoder ~~(110'')~~ according to one of claims 1 - 5, wherein a third phase corrector ~~(70c)~~ performs a phase correction for transients.

7. The decoder ~~(110'')~~ according to one of claims 1 - 6, wherein the audio subband signal calculator ~~(350)~~ is configured for calculating the audio subband signal for the first time frame using the corrected phase ~~(91)~~ for a first time frame and using a magnitude value ~~(47)~~ of the audio subband signal of the first time frame, wherein the magnitude value ~~(47)~~ is a magnitude of the audio signal ~~(32)~~ in the first time frame or a processed magnitude of the audio signal ~~(35)~~ in the first time frame.

8. The decoder ~~(110'')~~ according to one of claims 1 - 7, comprising:

a core decoder ~~(115)~~ configured for decoding a core decoded audio signal ~~(25)~~ in a time frame with a reduced number of subbands with respect to the audio signal ~~(55)~~;

a patcher ~~(120)~~ configured for patching a set of subbands of the core decoded audio signal ~~(25)~~ with the reduced number of subbands, wherein the set of subbands forms a first patch, wherein the patching applies to the set of subbands of the core decoded audio signal ~~(25)~~ to further subbands in the time frame, adjacent to the reduced number of subbands, to obtain an audio signal ~~(32)~~ with a regular number of subbands;

a magnitude processor ~~(125')~~ for processing magnitude values of the audio subband signal ~~(355)~~ in the time frame;

an audio signal synthesizer ~~(100)~~ for synthesizing audio subband signals to obtain a synthesized decoded audio signal.

9. The decoder ~~(110'')~~ according to one of claims 1 - 8, wherein a plurality of target spectrum generators ~~(65)~~ comprising the first target spectrum generator ~~(65a)~~, a second target spectrum generator ~~(65b)~~, or a third target spectrum generator ~~(65c)~~, is configured for receiving and evaluating activation data ~~(365)~~ and one target spectrum generator of the plurality of target spectrum generators ~~(65)~~ is activated for further calculating the target spectrum based on the evaluation of the activation data ~~(365)~~.

10. An encoder ~~(155'')~~ for encoding an audio signal, the encoder ~~(155'')~~ comprising:

a phase determiner ~~(380)~~ for determining a phase ~~(45)~~ of the audio signal ~~(55)~~;

a calculator ~~(270)~~ for determining phase correction data ~~(255')~~ for an audio signal ~~(55)~~ based on the determined phase ~~(45)~~ of the audio signal ~~(55)~~;

the calculator comprising:

a variation determiner for determining a variation of the phase of the audio signal in a first and a second variation mode;

a variation comparator for comparing a first variation determined using the first variation mode and a second variation determined using the second variation mode; and

a correction data calculator for calculating the phase correction data in accordance with the first variation mode or the second variation mode based on a result of the comparing;

a core encoder ~~(160)~~ configured for core encoding the audio signal ~~(55)~~ to obtain a core encoded audio signal ~~(145)~~ having a reduced number of subbands with respect to the audio signal ~~(55)~~;

a parameter extractor ~~(165)~~ configured for extracting parameters ~~(190)~~ from the audio signal ~~(55)~~ for obtaining a low resolution parameter representation for a second set of subbands not included in the core encoded audio signal ~~(145)~~;

an output signal former ~~(120)~~ for forming an output signal ~~(135)~~ comprising the parameters ~~(190)~~, the core encoded audio signal ~~(145)~~, and the phase correction data ~~(295');~~.

~~wherein the calculator (270) comprises a set of correction data calculators (285a-c) for calculating the phase correction in accordane with a first variation mode, a second variation mode, or a third variation mode; and~~

~~wherein the calculator (270) is configured for determining activation data (365) for activating one correction data calculator of the set of correction data calculators (285a-c).~~

11. The encoder ~~(155'')~~ according to claim 10, wherein the output signal former ~~(170)~~ is configured to form the output signal ~~(135)~~ into a sequence of frames, wherein each frame comprising the parameters ~~(190)~~, the core encoded audio signal ~~(145)~~, and wherein only each N^{th} frame comprising the phase correction data ~~(295')~~, wherein N is greater or equal than 2.

12. The encoder ~~(155'')~~ according to claim 10 or 11,

wherein the calculator is configured for additionally calculating the phase correction in accordance with a third variation mode;

wherein the calculator is configured for determining activation data for activating one correction data calculator of the set of correction data calculators;

~~wherein the output signal former (170) is further configured for forming the output signal additionally comprising the activation data.~~
wherein the output signal former is configured for forming the output signal comprising the activation data, the parameters, the core encoded audio signal, and the phase correction data.

13. ~~M~~A method ~~(5800)~~ for decoding an audio signal ~~(32)~~ with a decoder ~~(110'')~~, the method ~~(5800)~~ comprising the following steps:

generating a first target spectrum ~~(85a'')~~ for a first time frame of a subband signal of the audio signal with a first target spectrum generator ~~(65a)~~ using first correction data ~~(295a)~~;

correcting, with a first phase correction algorithm, a phase of the subband signal in the first time frame of the audio signal ~~(32)~~ with a first phase corrector ~~(70a)~~, wherein the correction is performed by reducing, for the first time frame, a difference between a measure of the subband signal in the first time frame of the audio signal and the first target spectrum ~~(85a'')~~;

calculating the audio subband signal for the first time frame with an audio subband signal calculator ~~(350)~~ using a corrected phase ~~(91a)~~ determined by the first phase corrector for the first time frame generating a second target spectrum ~~(85b")~~ for the second time frame of the subband of the audio signal ~~(32)~~ using second correction data ~~(295b)~~;

correcting, with a second phase correction algorithm, a phase ~~(45)~~ of the subband signal in the second time frame of the audio signal ~~(32)~~, wherein the correction is performed by reducing, for the second time frame, a difference between a measure of the subband signal in the second time frame of the audio signal and the second target spectrum ~~(85b")~~,

wherein the second phase correction algorithm is different from the phase first correction algorithm; and

calculating the audio subband signal ~~(355)~~ for the second time frame using a corrected phase ~~(91a)~~ determined by the second phase corrector for the second time frame.

14. ~~M~~A method ~~(5900)~~ for encoding an audio signal with an encoder ~~(155")~~, the method ~~(5900)~~ comprising the following steps:

determining a phase ~~(45)~~ of the audio signal ~~(55)~~ with a phase determiner ~~(380)~~;

determining phase correction data ~~(295)~~ for an audio signal ~~(55)~~ with a calculator ~~(270)~~ based on the determined phase ~~(45)~~ of the audio signal ~~(55)~~;

the determining of the phase correction data comprising:

determining a variation of the phase of the audio signal in a first and a second variation mode;

comparing a first variation determined using the first variation mode and a second variation determined using the second variation mode; and

calculating the phase correction data in accordance with the first variation mode or the second variation mode based on a result of the comparing;

core encoding the audio signal ~~(55)~~ with a core encoder ~~(160)~~ to obtain a core encoded audio signal ~~(145)~~ having a reduced number of subbands with respect to the audio signal ~~(55)~~;

extracting parameters ~~(190)~~ from the audio signal ~~(55)~~ with a parameter extractor ~~(165)~~ for obtaining a low resolution parameter representation for a second set of subbands not included in the core encoded audio signal ~~(145)~~;

forming an output signal with an output signal former ~~(170)~~ comprising the parameters ~~(190)~~, the core encoded audio signal ~~(145)~~, and the phase correction data ~~(295');~~.

~~wherein the determining of the phase correction data comprises calculating the phase correction in accordance with a first variation mode, a second variation mode,or a third variation mode;~~

~~and wherein the determining of the phase correction data comprises determining activation data (365) for activating one correction data calculator of the set of correction data calculators (285a-c).~~

15. ~~C~~A computer program having a program code for performing the method according to claim 13 or 14 when the computer program runs on a computer.