CLAIMS

1. An audio encoding method, performed by an encoder and comprising:

obtaining a plurality of channel groups by performing a grouping on a channel sequence, wherein each of the plurality of channel groups comprises a plurality of consecutive channels in the channel sequence, and adjacent channel groups comprise one or more identical channels;

obtaining a frequency domain coefficient of each frame in each channel by performing a frequency domain conversion on an audio signal in each channel in the channel sequence frame by frame;

determining a target transformation matrix corresponding to the channel group in each frequency band in a frequency band set from a transformation matrix set according to the frequency domain coefficient of each channel;

obtaining encoded information of the channel group by performing an identical-band decorrelation processing on the frequency domain coefficient of the channel in the channel group based on the target transformation matrix in each frequency band; and

obtaining an encoded stream based on the encoded information of the channel group, and sending the encoded stream to a decoder for decoding.

2. The method according to claim 1, wherein determining the target transformation matrix in each frequency band corresponding to the channel group from the transformation matrix set according to the frequency domain coefficient of each channel comprises:

determining a first cross-correlation matrix between channels corresponding to each frequency band according to the frequency domain coefficient of each channel;

determining a second cross-correlation matrix for the channel group from the first cross-correlation matrix in each frequency band, wherein the second cross-correlation matrix comprises cross-correlation coefficients between channels in the channel group; and

determining the target transformation matrix for the channel group in each frequency band from the transformation matrix set based on the second cross-correlation matrix for the channel group in each frequency band.

3. The method according to claim 1 or 2, wherein obtaining the encoded information of the channel group by performing the identical-band decorrelation processing on the frequency domain coefficient of the channel in the channel group based on the target transformation matrix in each frequency band comprises:

obtaining frequency domain coefficients of the channels in the channel group in any frequency band *b*, and obtaining first encoded information of the channel group in the frequency

band *b* based on the frequency domain coefficients in the frequency band *b* and the target transformation matrix corresponding to the frequency band *b*;

obtaining second encoded information of the channel group according to the first encoded information of the channel group in each frequency band; and

obtaining the encoded information of the channel group based on the second encoded information and the target transformation matrix corresponding to each frequency band.

4. The method according to claim 2, wherein determining the target transformation matrix for the channel group in each frequency band from the transformation matrix set based on the second cross-correlation matrix for the channel group in each frequency band comprises:

determining, based on the second cross-correlation matrix in any frequency band *b*, the cross-correlation coefficient between any two channels in the channel group in the frequency band *b*; and

determining, according to the cross-correlation coefficient between any two channels in the channel group in the frequency band *b*, the target transformation matrix for the channel group in the frequency band *b* from the transformation matrix set,

optionally, wherein determining, according to the cross-correlation coefficient between any two channels in the channel group in the frequency band *b*, the target transformation matrix for the channel group in the frequency band *b* from the transformation matrix set comprises:

in a case where the cross-correlation coefficient between the two channels meets a condition for selecting a specified transformation matrix in the transformation matrix set, selecting the specified transformation matrix as the target transformation matrix in the frequency band *b*; and

in a case where the cross-correlation coefficient between the two channels does not meet the condition, according to a maximum cross-correlation coefficient between the two channels, selecting a transformation matrix other than the specified transformation matrix from the transformation matrix set as the target transformation matrix in the frequency band *b*.

5. The method according to claim 2, wherein determining the first cross-correlation matrix between channels the corresponding to each frequency band according to the frequency domain coefficient of each channel comprises:

determining an energy value of any channel in each frequency band according to the frequency domain coefficient of the channel; and

determining the first cross-correlation matrix corresponding to each frequency band according to the energy value of each channel in each frequency band,

optionally, wherein determining the first cross-correlation matrix corresponding to each frequency band according to the energy value of each channel in each frequency band comprises:

obtaining an energy ratio of any two channels in the channel sequence in any frequency band

b;

in a case where the energy ratio in the frequency band *b* is less than or equal to a first set threshold, or the energy ratio in the frequency band *b* is greater than or equal to a second set threshold, determining that the cross-correlation coefficient between the two channels in the frequency band *b* is zero, wherein the first set threshold is less than the second set threshold;

in a case where the energy ratio in the frequency band *b* is between the first set threshold and the second set threshold, determining the cross-correlation coefficient of the two channels in the frequency band *b* according to the frequency domain coefficients of the two channels in the frequency band *b*; and

obtaining the first cross-correlation matrix corresponding to the frequency band *b* based on the cross-correlation coefficient of the two channels in the frequency band *b*.

6. The method according to claim 2, wherein determining the second cross-correlation matrix for the channel group from the first cross-correlation matrix in each frequency band further comprises:

normalizing the first cross-correlation matrix in each frequency band, and extracting the second cross-correlation matrix corresponding to the channel group in each frequency band from a normalized first cross-correlation matrix in each frequency band according to the channels comprised in the channel group,

optionally, wherein normalizing the first cross-correlation matrix comprises:

determining a channel identifier associated with an arbitrary matrix element in the first cross-correlation matrix;

determining a normalized matrix element corresponding to the arbitrary matrix element according to the channel identifier associated; and

obtaining a normalization result of the arbitrary matrix element according to the arbitrary matrix element and the normalized matrix element.

7. The method according to any one of claims 3 to 6, further comprising:

for a first channel group, obtaining first encoded information of the first channel group in the frequency band *b* based on frequency domain coefficients of channels in the first channel group in the frequency band *b*, and according to the frequency domain coefficients in the frequency band *b* and the target transformation matrix corresponding to the frequency band *b*, wherein the first encoded information comprises center information, side information, and first information of the first channel group; and

for each remaining channel group except the first channel group, obtaining first encoded information of the remaining channel group in the frequency band *b* based on frequency domain coefficients of channels in the remaining channel group in the frequency band *b*, and according to

the frequency domain coefficients in the frequency band *b* and the target transformation matrix corresponding to the frequency band *b*, wherein the first encoded information comprises first information of the remaining channel group.

8. The method according to any one of claims 1 to 6, wherein one or more overlapping channels exist between the adjacent channel groups, and the method comprises:

determining that the adjacent channel groups comprise a first channel group and a second channel group, wherein the first channel group and the second channel group each comprise three consecutive channels in the channel sequence, and the first channel group and the second channel group comprise two identical channels.

9. An audio decoding method, performed by a decoder and comprising:

receiving an encoded stream sent by an encoder, wherein the encoded stream comprises encoded information of a plurality of channel groups, the plurality of channel groups are obtained by performing a grouping on a channel sequence sequentially, each of the plurality of the channel groups comprises a plurality of consecutive channels in the channel sequence, and adjacent channel groups comprise one or more identical channels;

decoding the plurality of channel groups sequentially, and determining, for a current channel group decoded, a target decoding matrix corresponding to the current channel group in each frequency band in a frequency band set according to encoded information of the current channel group;

obtaining a decoded frequency domain coefficient of the current channel group for the encoded information of the current channel group based on the target decoding matrix for the current channel group in each frequency band; and

obtaining a decoded audio signal in each channel in the channel sequence according to the decoded frequency domain coefficients of the plurality of channel groups.

10. The method according to claim 9, wherein determining the target decoding matrix corresponding to the current channel group in each frequency band in the frequency band set according to the encoded information of the current channel group comprises:

obtaining a target transformation matrix in each frequency band from the encoded information; and

obtaining the target decoding matrix for the current channel group in any frequency band *b* by querying a mapping relationship between transformation matrices and decoding matrices according to the target transformation matrix in the frequency band *b*.

11. The method according to claim 9 or 10, wherein in a case where the current channel group is a first channel group among the plurality of channel groups, obtaining the decoded frequency domain coefficient of the current channel group for the encoded information of the current channel

group based on the target decoding matrix for the current channel group in each frequency band comprises:

obtaining, from encoded information of the first channel group, first encoded information of the first channel group in any frequency band *b*;

decoding, based on a target decoding matrix for the first channel group in the frequency band *b*, first encoded information of the first channel group in the frequency band *b*, to obtain a first decoded frequency domain coefficient of the first channel group in the frequency band *b*; and

obtaining a second decoded frequency domain coefficient of the first channel group according to the first decoded frequency domain coefficient of the first channel group in each frequency band, wherein the second decoded frequency domain coefficient of the first channel group comprises three outputs,

optionally, wherein the first encoded information of the first channel group in any frequency band *b* comprises at least center information, side information and first information in the frequency band *b*.

12. The method according to claim 9 or 10, wherein in a case where the current channel group is a channel group other than a first channel group among the plurality of channel groups, obtaining the decoded frequency domain coefficient of the current channel group for the encoded information of the current channel group based on the target decoding matrix for the current channel group in each frequency band comprises:

determining a plurality of consecutive decoded channel groups that are adjacent to the current channel group as upmix channel groups corresponding to the current channel group;

obtaining first encoded information of the current channel group in any frequency band *b* from the encoded information;

obtaining a decoded frequency domain coefficient of the upmix channel group in each frequency band;

decoding the first encoded information in the frequency band *b* according to the target decoding matrix corresponding to the frequency band *b* and the decoded frequency domain coefficient in the frequency band *b* to obtain a first decoded frequency domain coefficient in the frequency band *b*; and

obtaining the decoded frequency domain coefficient of the current channel group according to the first decoded frequency domain coefficient of the current channel group in each frequency band, wherein the decoded frequency domain coefficient of the current channel group comprises one output,

optionally, wherein the first encoded information of the current channel group in any frequency band *b* comprises first information of the current channel group in the frequency band

b.

13. An encoder, comprising:

a processor; and

a memory for storing instructions executable by the processor,

wherein the processor is configured to implement steps of the method according to any one of claims 1 to 8.

14. A decoder, comprising:

a processor; and

a memory for storing instructions executable by the processor,

wherein the processor is configured to implement steps of the method according to any one of claims 9 to 12.

15. A computer-readable storage medium having stored therein computer program instructions that, when executed by a processor, cause steps of the method according to any one of claims 1 to 8 or any one of claims 9 to 12 to be implemented.