CLAIMS

1. An audio signal coding method, wherein the method comprises:

obtaining a frequency domain signal according to an input signal;

allocating predetermined bits to the frequency domain signal according to a predetermined allocation rule;

adjusting the bit allocation for the frequency domain signal when a highest frequency of the frequency domain signal to which bits are allocated is greater than a predetermined value, wherein the adjusting the bit allocation for the frequency domain signal comprises: reducing the number of bits allocated to a frequency band to which more bits are allocated in the frequency domain signal, and increasing the number of bits allocated to the highest frequency to which bits are allocated and a frequency domain signal near the highest frequency; and

coding the frequency domain signal according to the bit allocation for the frequency domain signal.

~~2. The method according to claim 1, wherein the adjusting the bit allocation for the frequency domain signal comprises: reducing the number of bits allocated to a frequency band to which more bits are allocated in the frequency domain signal, and increasing the number of bits allocated to the highest frequency to which bits are allocated and a frequency domain signal near the highest frequency.~~

~~3~~2. The method according to claim 1 ~~or 2~~, wherein the predetermined value is determined according to the number of the predetermined bits and a resolution of the frequency domain signal.

~~4~~3. The method according to ~~any one of~~ claims 1 ~~to 3~~or 2, wherein the predetermined allocation rule is that: more bits in the predetermined bits are allocated to a low frequency band signal in the frequency domain signal, and rest bits in the predetermined bits are allocated to a frequency band with greater energy except the low frequency band signal.

~~5~~4. The method according to any one of claims 1 to ~~4~~3, further comprising:

if the highest frequency is less than the predetermined value, maintaining the bit allocation for the frequency domain signal that is performed according to the predetermined allocation rule.

~~6. A signal decoding method, wherein the method comprises:~~

~~obtaining, from a received bit stream, a frequency domain signal obtained by decoding;~~

~~when the frequency domain signal obtained by decoding meets a predetermined condition, predicting, according to the frequency domain signal obtained by decoding, a frequency domain signal that is not obtained by decoding; and~~

~~obtaining, according to the frequency domain signal obtained by decoding and the predicted frequency domain signal, a time domain signal that is finally outputted.~~

~~7. The method according to claim 6, wherein that the frequency domain signal obtained by decoding meets at least one of the following conditions:~~

~~a highest frequency of the frequency domain signal obtained by decoding is greater than a predetermined value; and~~

~~the frequency domain signal obtained by decoding comprises a time domain coding signal on which frequency domain transformation is performed and that contributes to an output signal.~~

~~8. The method according to claim 6 or 7, wherein the step of obtaining, from a received bit stream, a frequency domain signal obtained by decoding comprises:~~

~~performing frequency domain decoding on frequency domain information in the bit stream to obtain a first frequency domain signal;~~

~~determining, according to the first frequency domain signal, whether a time domain coding signal that contributes to the output signal exists in the bit stream; and~~

~~when it is determined that a time domain coding signal that contributes to the output signal exists in the bit stream, performing time domain decoding and frequency domain transformation on the time domain coding signal to obtain a second frequency domain signal, and synthesizing the first frequency domain signal and the second frequency domain signal to obtain the frequency domain signal obtained by decoding.~~

~~9. The method according to any one of claims 6 to 8, wherein the predetermined value is determined according to the number of predetermined bits used for frequency domain coding and a resolution of the frequency domain signal obtained by decoding.~~

~~10. The method according to any one of claims 6 to 9, wherein the predicting, according to the frequency domain signal obtained by decoding, a frequency domain signal that is not obtained by decoding comprises: selecting a frequency domain signal in a frequency band from the frequency domain signal obtained by decoding, and predicting, according to the selected frequency domain signal, the frequency domain signal that is not obtained by decoding.~~

~~11. The method according to any one of claims 6 to 10, wherein the predicting a frequency domain signal that is not obtained by decoding comprises: estimating a resonant peak location of the frequency domain signal according to a line spectral frequency (LSF) or an immittance spectral frequency (ISF), and when an amplitude of a predicted frequency domain coefficient near the resonant peak location is greater than a threshold, reducing the amplitude of the predicted frequency domain coefficient near the resonant peak location.~~

~~12. The method according to any one of claims 6 to 11, wherein when the frequency domain~~

~~signal obtained by decoding does not meet the predetermined condition, the frequency domain signal that is not obtained by decoding is predicted by using noise.~~

~~13~~5. An audio signal coding device, wherein the device comprises:

a frequency domain transformation unit, configured to obtain a frequency domain signal according to an input signal;

a bit allocation unit, configured to allocate predetermined bits to the frequency domain signal according to a predetermined allocation rule; and

a bit adjustment unit, configured to adjust the bit allocation for the frequency domain signal when a highest frequency of the frequency domain signal to which bits are allocated is greater than or equal to a predetermined value, wherein the bit adjustment unit configured to adjust the bit allocation for the frequency domain signal by reducing the number of bits allocated to a frequency band to which more bits are allocated in the frequency domain signal, and increasing the number of bits allocated to the highest frequency to which bits are allocated and a frequency domain signal near the highest frequency; and

a frequency domain coding unit, configured to code the frequency domain signal according to the bit allocation for the frequency domain signal.

~~14. The device according to claim 13, wherein the bit adjustment unit configured to adjust the bit allocation for the frequency domain signal by reducing the number of bits allocated to a frequency band to which more bits are allocated in the frequency domain signal, and increasing the number of bits allocated to the highest frequency to which bits are allocated and a frequency domain signal near the highest frequency.~~

~~15~~6. The device according to claim ~~13 or 14~~5, wherein the predetermined value is determined according to the number of the predetermined bits and a resolution of the frequency domain signal.

~~16~~7. The device according to ~~any one of~~ claims ~~13~~ 6 or 7~~to 15~~, wherein the predetermined allocation rule is that: more bits in the predetermined bits are allocated to a low frequency band signal in the frequency domain signal, and rest bits in the predetermined bits are allocated to a frequency band with greater energy except the low frequency band signal.

~~17~~8. The device according to any one of claims ~~13~~ 5 to ~~16~~7, wherein when the highest frequency is less than the predetermined value, the bit adjustment unit configured to not adjust the bit allocation for the frequency domain signal, and the frequency domain coding unit codes the frequency domain signal according to the bit allocation that is performed by the bit allocation unit.

~~18. A signal decoding device, wherein the device comprises:~~

~~a decoding unit, configured to obtain, from a received bit stream, a frequency domain signal obtained by decoding;~~

a bandwidth extension unit, configured to predict, according to the frequency domain signal obtained by decoding, the frequency domain signal that is not obtained by decoding when the frequency domain signal obtained by decoding meets a predetermined condition; and

an output unit, configured to obtain, according to the frequency domain signal obtained by decoding and the predicted frequency domain signal, a time domain signal that is finally outputted.

19. The device according to claim 18, wherein that the frequency domain signal obtained by decoding meets at least one of the following: a highest frequency of the frequency domain signal obtained by decoding is greater than a predetermined value, and the frequency domain signal obtained by decoding comprises a time domain coding signal on which frequency domain transformation is performed and that contributes to an output signal.

20. The device according to claim 18 or 19, wherein the decoding unit obtains, from the received bit stream by performing the following operations, the frequency domain signal obtained by decoding:

performing frequency domain decoding on frequency domain information in the bit stream to obtain a first frequency domain signal;

determining, according to the first frequency domain signal, whether a time domain coding signal that contributes to the output signal exists in the bit stream; and

when it is determined that a time domain coding signal that contributes to the output signal exists in the bit stream, performing time domain decoding and frequency domain transformation on the time domain coding signal to obtain a second frequency domain signal, and synthesizing the first frequency domain signal and the second frequency domain signal to obtain the frequency domain signal obtained by decoding.

21. The device according to any one of claims 18 to 20, wherein the predetermined value is determined according to the number of predetermined bits used for frequency domain coding and a resolution of the frequency domain signal obtained by decoding.

22. The device according to any one of claims 18 to 21, wherein when the frequency domain signal obtained by decoding meets the predetermined condition, the bandwidth extension unit selects a frequency domain signal in a frequency band from the frequency domain signal obtained by decoding, and predicts, according to the selected frequency domain signal, the frequency domain signal that is not obtained by decoding.

23. The device according to any one of claims 18 to 22, wherein after predicting, according to the frequency domain signal obtained by decoding, the frequency domain signal that is not obtained by decoding, the bandwidth extension unit estimates a resonant peak location of the frequency domain signal according to a line spectral frequency (LSF) or an immittance spectral frequency

~~(ISF), and when an amplitude of a predicted frequency domain coefficient near the resonant peak location is greater than a threshold, reduces the amplitude of the predicted frequency domain coefficient near the resonant peak location.~~

~~24. The device according to any one of claims 18 to 23, wherein when the frequency domain signal obtained by decoding does not meet the predetermined condition, the bandwidth extension unit predicts, by using noise, the frequency domain signal that is not obtained by decoding.~~

~~25~~9. A computer-readable storage medium having a program recorded thereon; where the program makes the computer execute method of any of claims 1 to ~~1~~24.