CLAIMS

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

obtaining a plurality of sub-bands of an audio signal and a scale factor of each sub-band;

determining, based on the scale factors of the plurality of sub-bands, a reference value used for shaping a spectral envelope of the audio signal; and

shaping the spectral envelope of the audio signal by using the reference value as a baseline, to obtain an adjustment factor of each sub-band corresponding to a shaped spectral envelope, wherein the adjustment factor is used to quantize a spectral value of the audio signal, and/or the adjustment factor is used to dequantize a code value of the spectral value.

2. The method according to claim 1, wherein the shaping the spectral envelope of the audio signal by using the reference value as a baseline, to obtain an adjustment factor of each sub-band corresponding to a shaped spectral envelope comprises:

obtaining a difference between the scale factor of the sub-band and the reference value; and

adjusting the scale factor of the sub-band based on the difference, to obtain the adjustment factor.

3. The method according to claim 2, wherein before the shaping the spectral envelope of the audio signal by using the reference value as a baseline, to obtain an adjustment factor of each sub-band corresponding to a shaped spectral envelope, the method further comprises:

masking the scale factor of the sub-band, and updating the scale factor of the sub-band based on a masked scale factor of the sub-band.

4. The method according to claim 2 or 3, wherein when the audio signal is a dual-channel signal, the adjusting the scale factor of the sub-band based on the difference, to obtain the adjustment factor comprises:

scaling down the difference, to obtain a scaled-down difference;

updating the scale factor of the sub-band based on the scaled-down difference and the reference value; and

obtaining the adjustment factor based on an updated scale factor of the sub-band.

5. The method according to claim 4, wherein a scale-down multiple of the difference is determined based on a value of the difference.

6. The method according to claim 2 or 3, wherein when the audio signal is a mono-channel signal, the adjusting the scale factor of the sub-band based on the difference, to obtain the adjustment factor comprises:

determining the difference as the adjustment factor.

7. The method according to claim 6, wherein before the obtaining a difference between the

scale factor of the sub-band and the reference value, the method further comprises:

performing signal enhancement on the scale factor of the sub-band, and updating the scale factor of the sub-band based on a scale factor that is of the sub-band and on which signal enhancement has been performed.

8. The method according to any one of claims 1 to 3, wherein

when the audio signal is a dual-channel signal, the reference value is obtained based on an average value of the scale factors of the plurality of sub-bands; and

when the audio signal is a mono-channel signal, the reference value is obtained based on a maximum value in the scale factors of the plurality of sub-bands.

9. The method according to claim 8, wherein before the determining, based on the scale factors of the plurality of sub-bands, a reference value used for shaping a spectral envelope of the audio signal, the method further comprises:

masking the scale factor of the sub-band, and updating the scale factor of the sub-band based on the masked scale factor of the sub-band.

10. The method according to claim 8 or 9, wherein when the audio signal is a mono-channel signal, before the determining, based on the scale factors of the plurality of sub-bands, a reference value used for shaping a spectral envelope of the audio signal, the method further comprises:

performing signal enhancement on the scale factor of the sub-band, and updating the scale factor of the sub-band based on a scale factor that is of the sub-band and on which signal enhancement has been performed.

11. The method according to claim 7 or 10, wherein a strength of performing signal enhancement on the scale factor of the sub-band is determined based on a frequency of the sub-band and a total number of the plurality of sub-bands.

12. The method according to claim 3 or 9, wherein the masking the scale factor of the sub-band comprises:

obtaining a masking coefficient that an adjacent sub-band of the sub-band has on the sub-band and a scale factor of the adjacent sub-band, wherein the masking coefficient indicates a masking degree; and

obtaining the masked scale factor of the sub-band based on the scale factor of the sub-band, the scale factor of the adjacent sub-band, and the masking coefficient that the adjacent sub-band has on the sub-band.

13. The method according to claim 12, wherein

when the audio signal is a dual-channel signal, the masking coefficient is determined based on a value relationship between the scale factor of the sub-band and the reference value; and

when the audio signal is a mono-channel signal, the masking coefficient is determined based

on a frequency relationship between the sub-band and the adjacent sub-band.

14. The method according to any one of claims 1 to 13, wherein the shaping the spectral envelope of the audio signal by using the reference value as a baseline, to obtain an adjustment factor of each sub-band corresponding to a shaped spectral envelope comprises:

when a bit rate of the audio signal is less than a bit rate threshold and/or an energy concentration of the audio signal is less than a concentration threshold, shaping the spectral envelope of the audio signal by using the reference value as the baseline, to obtain the adjustment factor of each sub-band corresponding to the shaped spectral envelope.

15. An audio signal processing apparatus, wherein the apparatus comprises:

an obtaining module, configured to obtain a plurality of sub-bands of an audio signal and a scale factor of each sub-band;

a determining module, configured to determine, based on the scale factors of the plurality of sub-bands, a reference value used for shaping a spectral envelope of the audio signal; and

a processing module, configured to shape the spectral envelope of the audio signal by using the reference value as a baseline, to obtain an adjustment factor of each sub-band corresponding to a shaped spectral envelope, wherein the adjustment factor is used to quantize a spectral value of the audio signal, and/or the adjustment factor is used to dequantize a code value of the spectral value.

16. The apparatus according to claim 15, wherein the processing module is specifically configured to:

obtain a difference between the scale factor of the sub-band and the reference value; and

adjust the scale factor of the sub-band based on the difference, to obtain the adjustment factor.

17. The apparatus according to claim 16, wherein the processing module is further configured to:

mask the scale factor of the sub-band, and update the scale factor of the sub-band based on a masked scale factor of the sub-band.

18. The apparatus according to claim 16 or 17, wherein when the audio signal is a dual-channel signal, the processing module is specifically configured to:

scale down the difference, to obtain a scaled-down difference;

update the scale factor of the sub-band based on the scaled-down difference and the reference value; and

obtain the adjustment factor based on an updated scale factor of the sub-band.

19. A computer device, comprising a memory and a processor, wherein the memory stores program instructions, and the processor runs the program instructions, to perform the method according to any one of claims 1 to 14.

20. A computer-readable storage medium, wherein the storage medium stores a computer program, and when the computer program is executed by a processor, steps of the method according to any one of claims 1 to 14 are implemented.