CLAIMS

1. A method for image decoding, comprising:

obtaining feature channel differentiation information and/or spatial point differentiation information, and decoding a picture bitstream to obtain quantized residual values;

constructing dequantization precision parameters respectively corresponding to the quantized residual values based on the feature channel differentiation information and/or the spatial point differentiation information;

for any one of the quantized residual values, performing dequantization on the quantized residual value based on the dequantization precision parameter corresponding to the quantized residual value, to obtain reconstructed residual values; and

performing a synthesis transform on the reconstructed residual values to obtain a reconstructed picture block.

2. The method for image decoding according to claim 1, wherein decoding the picture bitstream to obtain the quantized residual values comprises:

extracting coding distribution parameters from a first picture bitstream;

decoding the coding distribution parameters to obtain probability distribution parameters;

quantizing the probability distribution parameters to obtain distribution quantization parameters; and

decoding a second picture bitstream based on the distribution quantization parameters to obtain the quantized residual values.

3. The method for image decoding according to claim 2, wherein quantizing the probability distribution parameters to obtain the distribution quantization parameters comprises:

constructing probability quantization parameters based on the feature channel differentiation information and/or the spatial point differentiation information; and

quantizing the probability distribution parameters based on the probability quantization parameters to obtain the distribution quantization parameters.

4. The method for image decoding according to claim 3, wherein constructing the probability quantization parameters based on the feature channel differentiation information and/or the spatial point differentiation information comprises:

constructing the probability quantization parameters based on feature channels or spatial points corresponding to the probability distribution parameters;

wherein different feature channels or spatial points correspond to different probability quantization parameters.

5. The method for image decoding according to claim 1, wherein obtaining the feature channel differentiation information and/or the spatial point differentiation information comprises:

decoding a picture bitstream to obtain the feature channel differentiation information and/or the spatial point differentiation information.

6. The method for image decoding according to claim 1, wherein constructing the dequantization precision parameters respectively corresponding to the quantized residual values based on the feature channel differentiation information and/or the spatial point differentiation information comprises:

extracting quantization steps respectively corresponding to categories of feature channels from the feature channel differentiation information; and

constructing the dequantization precision parameters respectively corresponding to the quantized residual values based on the quantization steps.

7. The method for image decoding according to claim 6, wherein different categories of feature channels correspond to different quantization steps.

8. The method for image decoding according to claim 1, wherein constructing the dequantization precision parameters respectively corresponding to the quantized residual values based on the feature channel differentiation information and/or the spatial point differentiation information comprises:

extracting quantization steps respectively corresponding to categories of spatial

points from the spatial point differentiation information; and

constructing the dequantization precision parameters respectively corresponding to the quantized residual values based on the quantization steps.

9. The method for image decoding according to claim 8, wherein different categories of spatial points correspond to different quantization steps.

10. The method for image decoding according to claim 1, wherein constructing the dequantization precision parameters respectively corresponding to the quantized residual values based on the feature channel differentiation information and/or the spatial point differentiation information comprises:

reading partitioned categories of spatial points from the spatial point differentiation information;

reading quantization steps respectively corresponding to categories of feature channels in each of the partitioned categories of spatial points from the feature channel differentiation information; and

constructing the dequantization precision parameters respectively corresponding to the quantized residual values based on the quantization steps.

11. The method for image decoding according to claim 6, wherein constructing the dequantization precision parameters respectively corresponding to the quantized residual values based on the quantization steps comprises:

decoding a picture bitstream to obtain probability distribution parameters;

extracting parameter interval thresholds from the feature channel differentiation information; and

constructing the dequantization precision parameters respectively corresponding to the quantized residual values based on the probability distribution parameters, the quantization steps, and the parameter interval thresholds.

12. The method for image decoding according to claim 1, wherein constructing the dequantization precision parameters respectively corresponding to the quantized residual values based on the feature channel differentiation information and/or the spatial point

differentiation information comprises:

parsing the feature channel differentiation information;

for any one of the quantized residual values,

obtaining segmented step size sets respectively corresponding to categories of feature channels, wherein the segmented step size set corresponding to one of the categories of feature channels comprises different quantization steps;

extracting, from the segmented step size set corresponding to one of the categories of feature channels, the quantization step corresponding to a channel segment to which the quantized residual value belongs; and

constructing the dequantization precision parameter corresponding to the quantized residual value based on the quantization step.

13. The method for image decoding according to claim 1, further comprising:

for any one of the quantized residual values,

obtaining a category of feature channels corresponding to the quantized residual value,

determining a channel segment to which the quantized residual value belongs in the category of feature channels,

determining a quantization step corresponding to the quantized residual value based on the category of feature channels and the channel segment, and

determining the dequantization precision parameter corresponding to the quantized residual value based on the quantization step; wherein a segmented step size set corresponding to one category of feature channels comprises different quantization steps, one category of feature channels is divided into a plurality of channel segments, and each channel segment corresponds to one quantization step.

14. The method for image decoding according to claim 1, wherein constructing the dequantization precision parameters respectively corresponding to the quantized residual values based on the feature channel differentiation information and/or the spatial point differentiation information comprises:

determining categories of feature channels and/or categories of spatial points respectively corresponding to the quantized residual values based on the feature channel

differentiation information and/or the spatial point differentiation information; and

determining the dequantization precision parameters respectively corresponding to the quantized residual values based on the categories of feature channels and/or the categories of spatial points;

wherein for different categories of feature channels and/or different categories of spatial points, different quantization precisions are adopted.

15. A method for image encoding, comprising:

performing an analysis transform on a to-be-processed picture block to obtain picture features;

performing residual calculation on the picture features to obtain picture residual values and probability distribution parameters;

constructing quantization precision parameters respectively corresponding to the picture residual values based on feature channel differentiation information and/or spatial point differentiation information;

performing quantization on the picture residual values based on the quantization precision parameters to obtain quantized residual values; and

writing the probability distribution parameters and the quantized residual values into a picture bitstream.

16. A decoding device comprising one or more processors, one or more memories and a decoding program stored on the one or more memories and runnable on the one or more processors, wherein the one or more processors execute the decoding program to implement the method according to any one of claims 1 to 14.

17. An encoding device comprising one or more processors, one or more memories and an encoding program stored on the one or more memories and runnable on the one or more processors, wherein the one or more processors execute the encoding program to implement the method according to claim 15.

18. A non-transitory computer-readable storage medium storing an image decoding program and/or an image encoding program;

wherein when the image decoding program is executed, the method for image decoding according to any one of claims 1-14 is implemented, or when the image encoding program is executed, the method for image encoding according to claim 15 is implemented.