CLAIMS

1. An image decoding method comprising:

splitting an upper coding block into a plurality of lower coding blocks according to split information;

determining a ~~predicted quantization parameter of a~~ current quantization group ~~determined according to at least one of block split information and block size information~~based on a split value of a current coding block~~;~~

~~determining a difference quantization parameter~~ among the plurality of lower coding blocks and a split value of the current quantization group;

~~determining~~ obtaining a quantization parameter of the current quantization group~~, based on the predicted quantization parameter and the difference quantization parameter of the current quantization group~~; and

inverse quantizing transform coefficients in a current transform block ~~comprised~~ in the current ~~quantization group, according to~~ coding block using the quantization parameter~~, of the current quantization group~~

wherein:

the split value of the current coding block is increased by 1 if the current coding block is obtained by splitting the upper coding block into two lower coding blocks according to non-quadtree split, and

the split value of the current coding block is increased by 2 if the current coding block is obtained by splitting the upper coding block into four lower coding blocks according to quadtree split.

2. The image decoding method of claim 1, wherein the current quantization group comprises one or more blocks comprising the current coding block, and

the one or more blocks comprised in the current quantization group are inverse quantized according to a same quantization parameter~~determining of the predicted quantization parameter of the current quantization group comprises~~

~~determining a predicted quantization parameter of the current block, based on a quantization parameter of an upper adjacent block of the current quantization group, a quantization parameter of a left adjacent block of the current quantization group,~~

~~and a quantization parameter of a quantization group decoded immediately before the current quantization group~~.

3. The image decoding method of claim 1, wherein a split value of one of the plurality of lower coding blocks based on the quadtree split indicates that a number of times the quadtree split is performed to obtain the current quantization group from a largest coding block, and a split value of the one of the plurality of lower coding blocks based on the non-quadtree split indicates that the number of times a split that is not the quadtree split is performed to obtain the current quantization group from the largest coding block~~the current quantization group comprises one or more blocks comprising the current block, and~~

~~the blocks comprised in the current quantization group are inverse quantized according to a same quantization parameter~~.

4. The image decoding method of claim 1, wherein the current quantization group is determined according to a weighted sum of a number of splitting times by the quadtree split and a number of splitting times by the non-quadtree split~~block split information comprises the number of quadtree splitting times and the number of non-quadtree splitting times,~~

~~the current quantization group is determined according to the number of quadtree splitting times and the number of non-quadtree splitting times, and~~

~~the number of quadtree splitting times indicates the number of times a quadtree split is performed to obtain the current quantization group from a largest coding block, and the number of non-quadtree splitting times indicates the number of times a split that is not the quadtree split is performed to obtain the current quantization group from the largest coding block~~.

~~5. The image decoding method of claim 4, wherein the current quantization group is determined according to a weighted sum of the number of quadtree splitting times and the number of non-quadtree splitting times.~~

~~6. The image decoding method of claim 1, wherein the block size information comprises a height and a width of a block, and~~

the current quantization group is determined based on a sum of the height and the width of the block or an average of the height and the width of the block.

7. The image decoding method of claim 1, wherein the block size information comprises binary logarithm (log) values of a height and a width of a block, and

the current quantization group is determined based on a sum of the binary log values of the height and the width of the block or an average of the binary log values of the height and the width of the block.

8. The image decoding method of claim 1, wherein the block size information comprises an area of a block or a binary log value of the area, and

the current quantization group is determined based on the area of the block or the binary log value of the area.

9. The image decoding method of claim 1, wherein the determining of the difference quantization parameter of the current quantization group comprises:

obtaining difference quantization parameter magnitude information and difference quantization parameter sign information from a bitstream; and

determining the difference quantization parameter of the current quantization group, according to the difference quantization parameter magnitude information and the difference quantization parameter sign information.

10. The image decoding method of claim 1, further comprising obtaining a difference quantization parameter-enabled flag with respect to an upper data unit of the current quantization group, and

the determining of the difference quantization parameter of the current quantization group comprises, when the difference quantization parameter-enabled flag indicates that it is allowed to determine a quantization parameter according to the difference quantization parameter, obtaining a difference quantization parameter of the current block.

11. An image decoding apparatus comprising a processor configured to

determine a predicted quantization parameter of a current quantization group determined according to at least one of block split information and block size information,

determine a difference quantization parameter of the current quantization group,

determine a quantization parameter of the current quantization group, based on the predicted quantization parameter and the difference quantization parameter of the current quantization group, and

inverse quantize a current block comprised in the current quantization group, according to the quantization parameter of the current quantization group.

12. An image decoding method comprising:

matching a current block to a current quantization parameter unit, based on at least one of a position and a size of the current block;

obtaining a predicted quantization parameter with respect to the current quantization parameter unit;

obtaining a difference quantization parameter with respect to the current quantization parameter unit;

determining a quantization parameter of the current quantization parameter unit, based on the predicted quantization parameter and the difference quantization parameter; and

inverse quantizing the current block according to the quantization parameter of the current quantization parameter unit.

13. The image decoding method of claim 12, wherein quantization parameter units of a picture or a slice comprising the current quantization parameter unit are all rectangles each having an MxN size.

14. The image decoding method of claim 12, wherein the obtaining of the predicted quantization parameter with respect to the current quantization parameter unit comprises obtaining the predicted quantization parameter from at least one of a left quantization parameter unit of the current quantization parameter unit, an upper quantization parameter unit of the current quantization parameter unit, and a block

decoded immediately before the current block.

15. The image decoding method of claim 12, wherein the obtaining of the predicted quantization parameter with respect to the current quantization parameter unit comprises determining a predicted quantization parameter with respect to a picture or slice comprising the current quantization parameter unit, as the predicted quantization parameter with respect to the current quantization parameter unit.

16. The image decoding method of claim 12, wherein the matching of the current block to the current quantization parameter unit, based on at least one of the position and the size of the current block comprises determining a quantization parameter unit comprising coordinate values of an upper-left sample of the current block, as the current quantization parameter unit of the current block.

17. The image decoding method of claim 12, wherein the matching of the current block to the current quantization parameter unit, based on at least one of the position and the size of the current block comprises, when the current block comprises a plurality of quantization parameter units, determining the plurality of quantization parameter units as current quantization parameter units of the current block,

the obtaining of the predicted quantization parameter with respect to the current quantization parameter unit, the obtaining of the difference quantization parameter with respect to the current quantization parameter unit, and the determining of the quantization parameter of the current quantization parameter unit, based on the predicted quantization parameter and the difference quantization parameter are performed with respect to each of the current quantization parameter units, and

the inverse quantizing of the current block according to the quantization parameter of the current quantization parameter unit comprises inverse quantizing the current block according to an average value of quantization parameters of the current quantization parameter units.

18. An image decoding apparatus comprising a processor configured to

~~match a current block to a current quantization parameter unit, based on at least one of a position and a size of the current block,~~

~~obtain a predicted quantization parameter with respect to the current quantization parameter unit,~~

~~obtain a difference quantization parameter with respect to the current quantization parameter unit,~~

~~determine a quantization parameter of the current quantization parameter unit, based on the predicted quantization parameter and the difference quantization parameter, and~~

~~inverse quantize the current block according to the quantization parameter of the current quantization parameter unit.~~