CLAIMS

1. A method of obtaining a chrominance quantization parameter (QP) for chrominance components based on a luminance QP for a luminance component, wherein the method is performed by a decoder, comprising:

receiving a bitstream;

parsing the bitstream to obtain a luminance QP and information on a chroma QP mapping table which associates a QP index (QPi) to a chrominance QP (QPc), wherein the values of the chroma QP mapping table satisfy a mapping function, wherein the mapping function is a piecewise mapping function, and information of the piecewise mapping function comprises pivot points of the piecewise mapping function, wherein the information on the chroma QP mapping table includes the pivot points of the piecewise mapping function;

obtaining a QPi based at least in a part on the obtained luminance QP;

obtaining a chroma QP mapping table based on the pivot points of the piecewise mapping function;

obtaining a first QPc based on the obtained chroma QP mapping table and the obtained QPi.

2. The method of claim 1, wherein the amount of the pivot points and its respective x and y coordinates are signaled in the bitstream either directly or based on delta values between coordinates of a current pivot point and coordinates of a previous pivot point.

3. The method of claim 1 or 2, wherein the mapping function is a piecewise function based on:

a linear equation;

an exponential equation;

a logarithmic equation; or

combinations of the equations above.

4. The method of any one of claims 1-3, wherein the information of the chroma QP mapping table is signaled jointly for all chrominance components.

5. The method of any one of claims 1-4, wherein the information of the chroma QP mapping

table comprises an indicator indicating whether the mapping function is signaled for chrominance components separately or jointly.

6. The method of any one of claims 1-5, wherein the information of the chroma QP mapping table is signaled at:

sequence level in a sequence parameter set, or

picture level in a picture parameter set, or

tile group level in a tile group parameter set, or

in an adaptation parameter set, or

in a supplemental enhancement information (SEI) message.

7. A decoder (30) comprising processing circuitry for carrying out the method according to any one of claims 1 to 6.

8. A non-transitory storage medium comprising a bitstream decoded by the method of any one of claims 1 to 6.

9. A decoder, comprising:

one or more processors; and

a non-transitory computer-readable storage medium coupled to the processors and storing programming for execution by the processors, wherein the programming, when executed by the processors, configures the decoder to carry out the method according to any one of claims 1 to 6.

10. A decoder for obtaining a chrominance quantization parameter (QP) for chrominance components based on a luminance QP for a luminance component, comprising:

a receiving unit configured to receive a bitstream;

a parsing unit configured to parse the bitstream to obtain a luminance QP and information on a chroma QP mapping table which associates a QP index (QPi) to a chrominance QP (QPc), wherein the values of the chroma QP mapping table satisfy a mapping function, wherein the mapping function is a piecewise mapping function, and information of the piecewise mapping function comprises pivot points of the piecewise mapping function, wherein the information on the chroma QP mapping table includes the pivot points of the piecewise mapping function;

a first obtaining unit configured to obtain a QPi based at least in a part on the obtained luminance QP;

a second obtaining unit configured to obtain a chroma QP mapping table based on the pivot points of the piecewise mapping function;

a third obtaining unit configured to obtain a first QPc based on the obtained chroma QP mapping table and the obtained QPi.

11. The decoder of claim 10, wherein the amount of the breakpoints, or the change points, or the pivot points and its respective x and y coordinates are signaled in the bitstream either directly or based on delta values between coordinates of a current pivot point and coordinates of a previous pivot point.

12. The decoder of claim 11 or 12, wherein the mapping function is a piecewise function based on:

a linear equation;

an exponential equation;

a logarithmic equation; or

combinations of the equations above.

13. The decoder of any one of claims 10-12, wherein the information of the chroma QP mapping table is signaled jointly for all chrominance components.

14. The decoder of any one of claims 10-13, wherein the information of the chroma QP mapping table comprises an indicator indicating whether the chroma QP mapping table is signaled for chrominance components separately or jointly.

15. The decoder of any one of claims 10-14, wherein the information of the chroma QP mapping table is signaled at:

sequence level in a sequence parameter set, or

picture level in a picture parameter set, or

tile group level in a tile group parameter set, or

in an adaptation parameter set, or

in a supplemental enhancement information (SEI) message.