~~**WHAT IS CLAIMED IS:**~~

CLAIMS

1. A method of decoding video data, the method comprising:

determining a quantization parameter predictor for a ~~chroma block~~first chroma block of a first chroma component and a second chroma block of a second chroma component of the video data based on a quantization parameter for a corresponding luma block;

determining a first block level quantization parameter offset, for the first chroma block, from an index into a first list of quantization parameter offsets for the first chroma component;

determining a first quantization parameter for the first chroma block based on the first block level quantization parameter offset and the quantization parameter predictor;

determining a first residual block based on the first quantization parameter; ~~and~~

reconstructing the first chroma block based on the first residual block~~.~~;

~~2. The method of claim 1, wherein~~ determining ~~the~~a second block level quantization parameter offset ~~comprises:~~

~~constructing a~~, for the second chroma block, from the index into a second list of quantization parameter offsets~~;~~

~~receiving an index into the~~ for the second chroma component, wherein the index into the first list of quantization parameter offsets is same as the index into the second list of quantization parameter offsets; ~~and~~

determining ~~the~~a second quantization parameter for the second chroma block based on the second block level quantization parameter offset ~~based on the index into the list of quantization parameter offsets.~~

~~3. The method of claim 1, wherein the chroma block is a first chroma block of a first chroma component, the block level quantization parameter offset is a first block level quantization parameter for the first chroma block, the quantization parameter for the chroma block is a first quantization parameter for the first chroma block, and the residual block is a first residual block, the method further comprising:~~

~~determining a second block level quantization parameter offset for a second chroma block of a second chroma component;~~

~~determining a second quantization parameter for the second chroma block based on the second block level quantization parameter offset and the same~~and the quantization parameter predictor;

determining a second residual block based on the second quantization parameter; and

reconstructing the second chroma block based on the second residual block.

~~4~~2. The method of claim ~~3~~1, wherein determining the first block level quantization parameter offset comprises~~-~~:

constructing the first list of quantization parameter offsets;

receiving the index into the first list of quantization parameter offsets; and

determining the first block level quantization parameter offset ~~from an index into a first list of quantization parameter offsets for the first chroma component, and wherein determining the second block level quantization parameter offset comprises determining the second block level~~ based on the index into the first list of quantization parameter ~~offset from the same index into a second list of quantization parameter offsets for the second chroma component~~offsets.

~~5. The method of claim 1, wherein the chroma block comprises a JointCbCr chroma block.~~

~~6~~3. The method of claim 1, further comprising:

receiving at least one of a first quantization parameter offset for the first chroma component in a picture parameter set or a second quantization parameter offset for the first chroma component in a slice parameter set,

wherein determining the first quantization parameter for the first chroma block comprises determining the first quantization parameter for the first chroma block based on the first block level quantization parameter offset, at least one of the first quantization parameter offset or the second quantization parameter offset, and the quantization parameter predictor.

~~7~~4. The method of claim 1, further comprising:

receiving a syntax element indicating that ~~the~~use of block level quantization parameter ~~offset~~offsets is ~~to be used for~~enabled,

wherein determining the first block level quantization parameter offset for the ~~chroma block,~~

~~wherein determining the block level quantization parameter offset for the~~first chroma block comprises determining the first block level quantization parameter offset based on the syntax element indicating that the use of block level quantization parameter ~~offset~~offsets is ~~to be used~~enabled.

~~8~~5. The method of claim 1, wherein the first block level quantization parameter offset is different for at least one other chroma block in a same slice or picture as the first chroma block and is determined on a chroma block-by-chroma block basis.

~~9~~6. The method of claim 1, wherein determining the first residual block based on the first quantization parameter comprises:

inverse-quantizing a plurality of coefficient values based on the first quantization parameter to generate inverse-quantized coefficient values; and

inverse-transforming the inverse-quantized coefficient values to generate the first residual block.

~~10~~7. The method of claim 1, wherein reconstructing the first chroma block comprises:

determining a prediction block for the first chroma block; and

adding the first residual block to the prediction block to reconstruct the first chroma block.

~~11~~8. A device for decoding video data, the device comprising:

memory configured to store a quantization parameter for a corresponding luma block of a ~~chroma block~~first chroma block of a first chroma component and a second chroma block of a second chroma component of the video data; and

processing circuitry coupled to the memory and configured to:

determine a quantization parameter predictor for the first chroma block and the second chroma block of the video data based on the quantization parameter for the corresponding luma block;

determine a first block level quantization parameter offset, for the first chroma block, from an index into a first list of quantization parameter offsets for the first chroma component;

determine a first quantization parameter for the first chroma block based on the first block level quantization parameter offset and the quantization parameter predictor;

determine a first residual block based on the first quantization parameter; ~~and~~

reconstruct the first chroma block based on the first residual block~~.~~;

~~12. The device of claim 11, wherein to~~ determine ~~the~~a second block level quantization parameter offset, for the second chroma block, from the ~~processing circuitry is configured to:~~

~~construct~~index into a second list of quantization parameter offsets~~;~~

~~receive an index into~~ for the second chroma component, wherein the index into the first list of quantization parameter offsets is same as the index into the second list of quantization parameter offsets; ~~and~~

determine ~~the~~a second quantization parameter for the second chroma block based on the second block level quantization parameter offset ~~based on the index into the list of quantization parameter offsets.~~

~~13. The device of claim 11, wherein the chroma block is a first chroma block of a first chroma component, the block level quantization parameter offset is a first block level quantization parameter for the first chroma block, the quantization parameter for the chroma block is a first quantization parameter for the first chroma block, and the residual block is a first residual block, and wherein the processing circuitry is configured to:~~

~~determine a second block level quantization parameter offset for a second chroma block of a second chroma component;~~

~~determine a second quantization parameter for the second chroma block based on the second block level quantization parameter offset and the same~~and the quantization parameter predictor;

determine a second residual block based on the second quantization parameter; and

reconstruct the second chroma block based on the second residual block.

~~14~~9. The device of claim ~~13~~8, wherein to determine the first block level quantization parameter offset, the processing circuitry is configured to~~-~~:

construct the first list of quantization parameter offsets;

receive the index into the first list of quantization parameter offsets; and

determine the first block level quantization parameter offset ~~from an~~based on the index into ~~a~~the first list of quantization parameter offsets ~~for the first chroma component, and~~.

10. The device of claim 8, wherein ~~to determine the second block level quantization parameter offset,~~ the processing circuitry is configured to ~~determine the second block level quantization parameter offset from the same index into a second list of quantization parameter offsets for the second chroma component.~~:

~~15. The device of claim 11, wherein the chroma block comprises a JointCbCr chroma block.~~

~~16. The device of claim 11, wherein the processing circuitry is configured to:~~

receive at least one of a first quantization parameter offset for the first chroma component in a picture parameter set or a second quantization parameter offset for the first chroma component in a slice parameter set,

wherein to determine the first quantization parameter for the first chroma block, the processing circuitry is configured to determine the first quantization parameter for the first chroma block based on the first block level quantization parameter offset, at least one of the first quantization parameter offset or the second quantization parameter offset, and the quantization parameter predictor.

~~17~~11. The device of claim ~~11~~8, wherein the processing circuitry is configured to:

receive a syntax element indicating that ~~the~~use of block level quantization parameter offsets is enabled offset is to be used for determining the block level quantization parameter offset for the chroma block,

wherein to determine the first block level quantization parameter offset for the first chroma block, the processing circuitry is configured to determine the first block level

quantization parameter offset based on the syntax element indicating that the use of block level quantization parameter ~~offset~~offsets is ~~to be used~~enabled.

~~18~~12. The device of claim ~~11~~8, wherein the first block level quantization parameter offset is different for at least one other chroma block in a same slice or picture as the first chroma block and is determined on a chroma block-by-chroma block basis.

~~19~~13. The device of claim ~~11~~8, wherein to determine the first residual block based on the first quantization parameter, the processing circuitry is configured to:

inverse-quantize a plurality of coefficient values based on the first quantization parameter to generate inverse-quantized coefficient values; and

inverse-transform the inverse-quantized coefficient values to generate the first residual block.

~~20~~14. The device of claim ~~11~~8, wherein to reconstruct the first chroma block, the processing circuitry is configured to:

determine a prediction block for the first chroma block; and

add the first residual block to the prediction block to reconstruct the first chroma block.

~~21~~15. The device of claim ~~11~~8, comprising a display configured to display decoded video data.

~~22~~16. The device of claim ~~11~~8, wherein the device comprises one of a camera, a computer, a wireless communication device, a broadcast receiver device, or a set-top box.

~~23. A~~17. A non-transitory computer-readable storage medium storing instructions thereon that when executed cause one or more processors of a device for decoding video data to:

determine a quantization parameter predictor for a ~~chroma block~~first chroma block of a first chroma component and a second chroma block of a second chroma component of the video data based on a quantization parameter for a corresponding luma block;

determine a first block level quantization parameter offset, for the first chroma block, from an index into a first list of quantization parameter offsets for the first chroma component;

determine a first quantization parameter for the first chroma block based on the first block level quantization parameter offset and the quantization parameter predictor;

determine a first residual block based on the first quantization parameter; ~~and~~

reconstruct the first chroma block based on the first residual block~~.~~;

~~24. The computer-readable storage medium of claim 23~~determine a second block level quantization parameter offset, for the second chroma block, from the index into a second list of quantization parameter offsets for the second chroma component, wherein the ~~instructions that cause the one or more processors to determine the block level quantization parameter offset comprise instructions that cause the one or more processors to:~~

~~construct a list of quantization parameter offsets;~~

~~receive an~~ index into the first list of quantization parameter offsets~~; and~~ is same as the index into the second list of quantization parameter offsets;

determine ~~the~~a second quantization parameter for the second chroma block based on the second block level quantization parameter offset ~~based on the index into the list of quantization parameter offsets.~~

~~25. The computer-readable storage medium of claim 23, wherein the chroma block is a first chroma block of a first chroma component, the block level quantization parameter offset is a first block level quantization parameter for the first chroma block, the quantization parameter for the chroma block is a first quantization parameter for the first chroma block, and the residual block is a first residual block, and wherein the instructions comprise instructions that cause the one or more processors to:~~

~~determine a second block level quantization parameter offset for a second chroma block of a second chroma component;~~

~~determine a second quantization parameter for the second chroma block based on the second block level quantization parameter offset and the same~~and the quantization parameter predictor;

determine a second residual block based on the second quantization parameter; and

reconstruct the second chroma block based on the second residual block.

~~26~~18. The non-transitory computer-readable storage medium of claim ~~25~~17, wherein the instructions that cause the one or more processors to determine the first block level quantization parameter offset comprise instructions that cause the one or more processors to~~-~~:

construct the first list of quantization parameter offsets;

receive the index into the first list of quantization parameter offsets; and

determine the first block level quantization parameter offset ~~from an index into a first list of quantization parameter offsets for the first chroma component, and wherein the instructions that cause the one or more processors to determine~~based on the ~~second block level quantization parameter offset comprise instructions that cause~~ index into the ~~one or more processors to determine the second block level~~ first list of quantization parameter ~~offset from the same index into a second list of quantization parameter offsets for the second chroma component~~offsets.

~~27~~19. The ~~computer-readable storage medium of claim 23, wherein the chroma block comprises a JointCbCr chroma block.~~

~~28. The~~non-transitory computer-readable storage medium of claim ~~23~~17, further comprising instructions that cause the one or more processors to:

receive at least one of a first quantization parameter offset for the first chroma component in a picture parameter set or a second quantization parameter offset for the first chroma component in a slice parameter set,

wherein the instructions that cause the one or more processors to determine the first quantization parameter for the first chroma block comprise instructions that cause the one or more processors to determine the first quantization parameter for the first chroma block based on the first block level quantization parameter offset, at least one of the first quantization parameter offset or the second quantization parameter offset, and the quantization parameter predictor.

~~29~~20. A device for decoding video data, the device comprising:

means for determining a quantization parameter predictor for a ~~chroma block~~first chroma block of a first chroma component and a second chroma block of a second chroma component of the video data based on a quantization parameter for a corresponding luma block;

means for determining a first block level quantization parameter offset, for the chroma block~~;~~

~~means for determining a~~ , from an index into a first list of quantization parameter offsets for the first chroma component;

means for determining a first quantization parameter for the first chroma block based on the first block level quantization parameter offset and the quantization parameter predictor;

means for determining a first residual block based on the first quantization parameter; ~~and~~

means for reconstructing the first chroma block based on the first residual block~~.~~;

~~30. The device of claim 29,~~ means for determining a second block level quantization parameter offset, for the second chroma block, from the index into a second list of quantization parameter offsets for the second chroma component, wherein the ~~means for determining the block level quantization parameter offset comprises:~~

~~means for constructing a~~ index into the first list of quantization parameter offsets~~;~~

~~means for receiving an~~ is same as the index into the second list of quantization parameter offsets;~~ and~~

means for determining ~~the block level~~a second quantization parameter ~~offset based on the index into the list of quantization parameter offsets.~~

~~31. The device of claim 29, wherein the~~for the second chroma block ~~is a first chroma block of a first chroma component, the~~based on the second block level quantization parameter offset ~~is a first block level quantization parameter for the first chroma block,~~and the ~~quantization parameter for the chroma block is a first quantization parameter for the first chroma block, and the residual block is a first residual block, the device further comprising:~~

~~means for determining a second block level quantization parameter offset for a second chroma block of a second chroma component;~~

~~means for determining a second quantization parameter for the second chroma block based on the second block level quantization parameter offset and the same~~ quantization parameter predictor;

means for determining a second residual block based on the second quantization parameter; and

means for reconstructing the second chroma block based on the second residual block.

~~32~~21. The device of claim ~~31~~20, wherein the means for determining the first block level quantization parameter offset comprises~~ -~~:

means for constructing the first list of quantization parameter offsets;

means for receiving the index into the first list of quantization parameter offsets; and

means for determining the first block level quantization parameter offset ~~from an index into a first list of quantization parameter offsets for the first chroma component, and wherein the means for determining the second block level quantization parameter offset comprises means for determining the second block level~~ based on the index into the first list of quantization parameter ~~offset from the same index into a second list of quantization parameter offsets for the second chroma component~~offsets.

~~33. The device of claim 29, wherein the chroma block comprises a JointCbCr chroma block.~~

~~34~~22. The device of claim ~~29~~20, further comprising:

means for receiving at least one of a first quantization parameter offset for the first chroma component in a picture parameter set or a second quantization parameter offset for the first chroma component in a slice parameter set,

wherein the means for determining the first quantization parameter for the first chroma block comprises means for determining the first quantization parameter for the first chroma block based on the first block level quantization parameter offset, at least one of the first quantization parameter offset or the second quantization parameter offset, and the quantization parameter predictor.

~~35~~23. The device of claim ~~29~~20, further comprising:

means for receiving a syntax element indicating that ~~the~~use of block level quantization parameter ~~offset~~offsets is ~~to be used~~enabled,

wherein the means for determining the first block level quantization parameter offset for the ~~chroma block,~~

~~wherein the means for determining the block level quantization parameter offset for the~~first chroma block comprises means for determining the first block level quantization parameter offset based on the syntax element indicating that the use of block level quantization parameter ~~offset~~offsets is ~~to be used~~enabled.

~~36~~24. A method of encoding video data, the method comprising:

determining a quantization parameter predictor for a ~~chroma block~~first chroma block of a first chroma component and a second chroma block of a seconc chroma component of the video data based on a quantization parameter for a corresponding luma block;

determining a first block level quantization parameter offset, for the chroma block~~;~~ ~~determining a~~ , wherein an index into a first list of quantization parameter offsets for the first chroma component identifies the first block level quantization parameter offset;

determining a first quantization parameter for the first chroma block based on the first block level quantization parameter offset and the quantization parameter predictor;

quantizing coefficient values for a first residual block based on the ~~determined~~first quantization parameter for the first chroma block; ~~and~~

signaling information indicative of the quantized coefficient values~~.~~ for the first chroma block;

~~37. The method of claim 36, further comprising:~~

~~constructing~~determining a ~~list of~~second block level quantization parameter ~~offsets;~~

~~determining~~offset, for the second chroma block, wherien an index into ~~the~~a second list of quantization parameter offsets for the ~~determined block level quantization parameter offset; and~~

~~signaling information indicative of the index.~~

~~38. The method of claim 36, wherein the chroma block is a first chroma block of a first~~second chroma component~~,~~ identifies the second block level quantization parameter offset ~~is a first block level quantization parameter for the first chroma block, the quantization parameter for the chroma block is a first quantization parameter for the first chroma block, and the residual block is a first residual block, the method further comprising:~~and is same as the index into the first list of quantization parameter offsets;

~~determining a second block level quantization parameter offset for a second chroma block of a second chroma component;~~

determining a second quantization parameter for the second chroma block based on the second block level quantization parameter offset and the ~~same~~ quantization parameter predictor;

quantizing coefficient values for a second residual block based on the second quantization parameter; and

signaling information indicative of the quantized coefficient values for the second residual block.

~~39~~25. The method of claim ~~36~~24, further comprising:

constructing the first list of quantization parameter offsets;

determining the index into the first list of quantization parameter offsets for the first block level quantization parameter offset; and

signaling information indicative of the index.

26. The method of claim 24, further comprising:

signaling at least one of a first quantization parameter offset for the first chroma component in a picture parameter set or a second quantization parameter offset for the first chroma component in a slice parameter set,

wherein determining the first quantization parameter for the first chroma block comprises determining the first quantization parameter for the first chroma block based on the first block level quantization parameter offset, at least one of the first quantization parameter offset or the second quantization parameter offset, and the quantization parameter predictor.

~~40~~27. The method of claim ~~36~~24, further comprising:

signaling a syntax element indicating that the use of block level quantization parameter ~~offset~~offsets is ~~to be used for determining the block level quantization parameter offset for the chroma block~~enabled.

~~41~~28. A device for encoding video data, the device comprising:

memory configured to store a quantization parameter for a corresponding luma block of a ~~chroma block~~first chroma block of a first chroma component and a second chroma block of a second chroma component of the video data; and

processing circuitry coupled to the memory and configured to:

determine a quantization parameter predictor for ~~a~~the first chroma block and the second chroma block of the video data based on ~~a~~the quantization parameter for ~~a~~the corresponding luma block;

determine a first block level quantization parameter offset for the first chroma block~~;~~

~~determine a~~ , wherein an index into a first list of quantization parameter offsets for the first chroma component identifies the first block level quantization parameter offset;

determine a first quantization parameter for the first chroma block based on the first block level quantization parameter offset and the quantization parameter predictor;

quantize coefficient values for a first residual block based on the ~~determined~~first quantization parameter for the first chroma block; ~~and~~

signal information indicative of the quantized coefficient values~~.~~

~~42. The device of claim 41, wherein the processing circuitry is configured to:~~

~~construct a list of quantization parameter offsets;~~

~~determine an index into the list of quantization parameter offsets for the determined block level quantization parameter offset; and~~

~~signal information indicative of the index.~~

~~43. The device of claim 41, wherein the chroma block is a~~ for the first chroma block ~~of a first chroma component, the block level quantization parameter offset is a first block level quantization parameter for the first chroma block, the quantization parameter for the chroma block is a first quantization parameter for the first chroma block, and the residual block is a first residual block, and wherein the processing circuitry is configured to:~~;

determine a second block level quantization parameter offset, for ~~a~~the second chroma block ~~of~~ , wherien an index into a second ~~chroma component~~list of quantization parameter offsets for the second chroma component identifies the second block level quantization parameter offset and is same as the index into the first list of quantization parameter offsets;

determine a second quantization parameter for the second chroma block based on the second block level quantization parameter offset and the same quantization parameter predictor;

quantize coefficient values for a second residual block based on the second quantization parameter; and

signal information indicative of the quantized coefficient values for the second residual block.

~~44~~29. The device of claim ~~41~~28, wherein the processing circuitry is configured to:

construct the first list of quantization parameter offsets;

determine the index into the first list of quantization parameter offsets for the first block level quantization parameter offset; and

signal information indicative of the index.

30. The device of claim 28, wherein the processing circuitry is configured to:

signal at least one of a first quantization parameter offset for the first chroma component in a picture parameter set or a second quantization parameter offset for the first chroma component in a slice parameter set,

wherein to determine the first quantization parameter for the first chroma block, the processing circuitry is configured to determine the first quantization parameter for the first

chroma block based on the first block level quantization parameter offset, at least one of the first quantization parameter offset or the second quantization parameter offset, and the quantization parameter predictor.

~~45~~31. The device of claim ~~41~~28, wherein the processing circuitry is configured to:

signal a syntax element indicating that the use of block level quantization parameter ~~offset~~offsets is ~~to be used for determining the block level quantization parameter offset for the chroma block~~enabled.