CLAIMS

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

determining a quantization parameter predictor for a 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;

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

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 index into the first list of quantization parameter offsets is same as the index into the second list of quantization parameter offsets;

determining a second quantization parameter for the second chroma block based on the second block level quantization parameter offset 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.

2. The method of claim 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 based on the index into the first list of quantization parameter offsets.

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.

4. The method of claim 1, further comprising:

receiving a syntax element indicating that use of block level quantization parameter offsets is enabled,

wherein determining the first 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 offsets is enabled.

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.

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.

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.

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

memory configured to store a quantization parameter for a corresponding luma block of a 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;

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

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 index into the first list of quantization parameter offsets is same as the index into the second 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 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.

9. The device of claim 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 based on the index into the first list of quantization parameter offsets.

10. The device of claim 8, 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.

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

receive a syntax element indicating that 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 offsets is enabled.

12. The device of claim 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.

13. The device of claim 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.

14. The device of claim 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.

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

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

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 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;

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

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 index into the first list of quantization parameter offsets is same as the index into the second 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 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.

18. The non-transitory computer-readable storage medium of claim 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 based on the index into the first list of quantization parameter offsets.

19. The non-transitory computer-readable storage medium of claim 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.

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

means for determining a quantization parameter predictor for a 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, 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;

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

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 index into the first list of quantization parameter offsets is same as the index into the second list of quantization parameter offsets;

means for determining a second quantization parameter for the second chroma block based on the second block level quantization parameter offset and the 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.

21. The device of claim 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 based on the index into the first list of quantization parameter offsets.

22. The device of claim 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.

23. The device of claim 20, further comprising:

means for receiving a syntax element indicating that use of block level quantization parameter offsets is enabled,

wherein the means for determining the first 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 offsets is enabled.

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

determining a quantization parameter predictor for a 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, 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 first quantization parameter for the first chroma block;

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

determining a second block level quantization parameter offset, for the second chroma block, wherien an index into a second 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;

determining a second quantization parameter for the second chroma block based on the second block level quantization parameter offset and the 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.

25. The method of claim 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.

27. The method of claim 24, further comprising:

signaling a syntax element indicating that the use of block level quantization parameter offsets is enabled.

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

memory configured to store a quantization parameter for a corresponding luma block of a 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, 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 first quantization parameter for the first chroma block;

signal information indicative of the quantized coefficient values for the first chroma block;

determine a second block level quantization parameter offset, for the second chroma block, wherien an index into a second 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.

29. The device of claim 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.

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

signal a syntax element indicating that the use of block level quantization parameter offsets is enabled.