CLAIMS

1. A method of processing video data, comprising:

performing a conversion between a video unit of a video and a bitstream of the video according to a rule,

wherein the rule specifies that whether a cross-component adaptive loop filter (CC-ALF) mode is enabled for the video unit and whether an adaptive loop filter (ALF) mode is enabled for the video unit are controlled by different syntax elements in a sequence parameter set (SPS) of the bitstream; and

wherein a first syntax element indicates whether the CC-ALF mode is enabled, a second syntax element indicates whether the ALF mode is enabled, and whether the first syntax element is present in the SPS depends on a value of the second syntax element and a type of color format of the video.

2. The method of claim 1, wherein the rule specifies that the first syntax element is present in the SPS in condition that the value of the second syntax element is true which indicates that the ALF mode is enabled and the type of color format is not 4:0:0.

3. The method of claim 1 or 2, wherein one or more syntax elements related to the CC-ALF mode are conditionally present in a picture header or a slice header.

4. The method of claim 3, wherein the one or more syntax elements includes at least one of:

a third syntax element that indicates the CC-ALF mode for a Cb color component is enabled for a slice or a picture,

a fourth syntax element that indicates an adaptation parameter set (APS) id of an ALF APS referenced by the Cb color component of the slice or slices in the picture,

a fifth syntax element that indicates the CC-ALF mode for a Cr color component is enabled for the slice or the picture , and

a sixth syntax element that indicates an APS id of an ALF APS referenced by Cr color component of the slice or the slices in the picture.

5. The method of claim 3 or 4, wherein the rule specifies that the one or more syntax elements are present in the picture header or the slice header in condition that at least both of the following conditions are met:

the type of color format of the video is not 4:0:0, and

the first syntax element present in the SPS indicates that the CC-ALF mode is enabled.

6. The method of claim 3 or 4, wherein the rule specifies that the one or more syntax elements are excluded from the picture header or the slice header in response to the type of color format of the video being 4:0:0.

7. The method of claim 3 or 4, wherein the rule specifies that the one or more syntax elements are excluded from the picture header or the slice header in response to the first syntax element present in the SPS indicating that the CC-ALF mode is disabled.

8. The method of any of claims 1-7, wherein the conversion comprising encoding the video into the bitstream.

9. The method of any of claims 1-7, wherein the conversion comprises decoding the video from the bitstream.

10. An apparatus for processing video data comprising a processor and a non-transitory memory with instructions thereon, wherein the instructions upon execution by the processor, cause the processor to:

perform a conversion between a video unit of a video and a bitstream of the video according to a rule,

wherein the rule specifies that whether a cross-component adaptive loop filter (CC-ALF) mode is enabled for the video unit and whether an adaptive loop filter (ALF) mode is enabled for the

video unit are controlled by different syntax elements in a sequence parameter set (SPS) of the bitstream; and

wherein a first syntax element indicates whether the CC-ALF mode is enabled, a second syntax element indicates whether the ALF mode is enabled, and whether the first syntax element is present in the SPS depends on a value of the second syntax element and a type of color format of the video.

11. The apparatus of claim 10, wherein the rule specifies that the first syntax element is present in the SPS in condition that the value of the second syntax element is true which indicates that the ALF mode is enabled and the type of color format is not 4:0:0.

12. The apparatus of claim 10 or 11, wherein one or more syntax elements related to the CC-ALF mode are conditionally present in a picture header or a slice header; and

wherein the one or more syntax elements includes at least one of:

a third syntax element that indicates the CC-ALF mode for a Cb color component is enabled for a slice or a picture,

a fourth syntax element that indicates an adaptation parameter set (APS) id of an ALF APS referenced by the Cb color component of the slice or slices in the picture,

a fifth syntax element that indicates the CC-ALF mode for a Cr color component is enabled for the slice or the picture , and

a sixth syntax element that indicates an APS id of an ALF APS referenced by Cr color component of the slice or the slices in the picture.

13. The apparatus of claim 12, wherein the rule specifies that the one or more syntax elements are present in the picture header or the slice header in condition that at least both of the following conditions are met: the type of color format of the video is not 4:0:0, and the first syntax element present in the SPS indicates that the CC-ALF mode is enabled;

wherein the rule specifies that the one or more syntax elements are excluded from the picture header or the slice header in response to the type of color format of the video being 4:0:0; and

wherein the rule specifies that the one or more syntax elements are excluded from the picture header or the slice header in response to the first syntax element present in the SPS indicating that the CC-ALF mode is disabled.

14. A non-transitory computer-readable storage medium storing instructions that cause a processor to:

perform a conversion between a video unit of a video and a bitstream of the video according to a rule,

wherein the rule specifies that whether a cross-component adaptive loop filter (CC-ALF) mode is enabled for the video unit and whether an adaptive loop filter (ALF) mode is enabled for the video unit are controlled by different syntax elements in a sequence parameter set (SPS) of the bitstream; and

wherein a first syntax element indicates whether the CC-ALF mode is enabled, a second syntax element indicates whether the ALF mode is enabled, and whether the first syntax element is present in the SPS depends on a value of the second syntax element and a type of color format of the video.

15. The non-transitory computer-readable storage medium of claim 14, wherein the rule specifies that the first syntax element is present in the SPS in condition that the value of the second syntax element is true which indicates that the ALF mode is enabled and the type of color format is not 4:0:0.

16. The non-transitory computer-readable storage medium of claim 14 or 15, wherein one or more syntax elements related to the CC-ALF mode are conditionally present in a picture header or a slice header; and

wherein the one or more syntax elements includes at least one of:

a third syntax element that indicates the CC-ALF mode for a Cb color component is enabled for a slice or a picture,

a fourth syntax element that indicates an adaptation parameter set (APS) id of an ALF APS referenced by the Cb color component of the slice or slices in the picture,

a fifth syntax element that indicates the CC-ALF mode for a Cr color component is enabled for the slice or the picture , and

a sixth syntax element that indicates an APS id of an ALF APS referenced by Cr color component of the slice or the slices in the picture.

17. The non-transitory computer-readable storage medium of claim 16, wherein the rule specifies that the one or more syntax elements are present in the picture header or the slice header in condition that at least both of the following conditions are met: the type of color format of the video is not 4:0:0, and the first syntax element present in the SPS indicates that the CC-ALF mode is enabled;

wherein the rule specifies that the one or more syntax elements are excluded from the picture header or the slice header in response to the type of color format of the video being 4:0:0; and

wherein the rule specifies that the one or more syntax elements are excluded from the picture header or the slice header in response to the first syntax element present in the SPS indicating that the CC-ALF mode is disabled.

18. A non-transitory computer-readable recording medium storing a bitstream of a video which is generated by a method performed by a video processing apparatus, wherein the method comprises:

generating a bitstream for a video unit of a video according to a rule,

wherein the rule specifies that whether a cross-component adaptive loop filter (CC-ALF) mode is enabled for the video unit and whether an adaptive loop filter (ALF) mode is enabled for the video unit are controlled by different syntax elements in a sequence parameter set (SPS) of the bitstream; and

wherein a first syntax element indicates whether the CC-ALF mode is enabled, a second syntax element indicates whether the ALF mode is enabled, and whether the first syntax element is present in the SPS depends on a value of the second syntax element and a type of color format of the video.

19. The non-transitory computer-readable recording medium of claim 18, wherein the rule specifies that the first syntax element is present in the SPS in condition that the value of the second syntax element is true which indicates that the ALF mode is enabled and the type of color format is not 4:0:0;

wherein one or more syntax elements related to the CC-ALF mode are conditionally present in a picture header or a slice header; and

wherein the one or more syntax elements includes at least one of:

a third syntax element that indicates the CC-ALF mode for a Cb color component is enabled for a slice or a picture,

a fourth syntax element that indicates an adaptation parameter set (APS) id of an ALF APS referenced by the Cb color component of the slice or slices in the picture,

a fifth syntax element that indicates the CC-ALF mode for a Cr color component is enabled for the slice or the picture , and

a sixth syntax element that indicates an APS id of an ALF APS referenced by Cr color component of the slice or the slices in the picture.

20. The non-transitory computer-readable recording medium of claim 19, wherein the rule specifies that the one or more syntax elements are present in the picture header or the slice header in condition that at least both of the following conditions are met: the type of color format of the video is not 4:0:0, and the first syntax element present in the SPS indicates that the CC-ALF mode is enabled;

wherein the rule specifies that the one or more syntax elements are excluded from the picture header or the slice header in response to the type of color format of the video being 4:0:0; and

wherein the rule specifies that the one or more syntax elements are excluded from the picture header or the slice header in response to the first syntax element present in the SPS indicating that the CC-ALF mode is disabled.