obtained by a person of ordinary skill in the art based on the embodiments of the present invention without creative efforts shall fall within the protection scope of the present invention.

[0024] The wording "and/or" in this document merely describes an association between associated objects, indicating that three relationships may exist, for example, A and/or B may indicate three situations: only A exists, A and B exist at the same time, and only B exists. In addition, the character "/" in this document usually represents that the former and later associated objects are in a "or" relationship.

[0025] A chroma component in an embodiments of the present invention may refer to any chroma component of two chroma components. A DC mode, a vertical mode, a horizontal mode, and a planar mode in a chroma component intra prediction mode set of HEVC are the same as corresponding modes in the H.264/AVC standard in terms of a basic principle, but are different in specific implementation methods. An LM mode and a DM mode are two newly added modes. Besides the prediction modes mentioned above, there is a replacement mode. If the DM mode is the same as one of the remaining prediction modes~~a remaining prediction mode~~ in a prediction mode set, the replacement mode is used to replace the chroma prediction mode that is the same as the DM mode, so as to make a new prediction mode set. The DM mode performs prediction by using an intra prediction mode of a luma component of a current block as a prediction mode of a chroma component. Therefore, the method may also equivalently determine whether an intra prediction mode of a luma component is the same as a remaining prediction mode in the prediction mode set. The replacement mode may be a prediction mode that is different from all the modes in the chroma component prediction mode set.

[0026] The chroma component prediction mode set may be different in different embodiments of the present invention~~patent~~. One usable chroma component prediction mode set includes a DM mode, an LM mode, a DC mode, a vertical mode, a horizontal mode, and a planar mode. Another usable chroma component prediction mode set includes a DM mode, a DC mode, a vertical mode, a horizontal mode, and a planar mode. Another usable chroma component prediction mode set includes a DM mode, an LM mode, and a default mode. Another usable chroma component prediction mode set includes a DM mode and a default mode.

[0027] The LM mode in the modes mentioned above is an optional technology in the existing HEVC solution. Under an HE (High Efficiency, high efficiency) encoding configuration condition, the LM mode is included in available modes for the chroma component intra prediction mode. In such cases, the prediction mode set includes six prediction modes. However, under an LC (Low Complexity, low complexity) encoding configuration condition, the LM mode is not included in available modes for the chroma component intra prediction mode. In such cases, the prediction mode set includes five prediction modes. In the existing HEVC solution, whether the LM mode is an available mode is determined according to a binary flag (flag) in a bitstream.

[0028] The chroma encoding solution uses a TU (Truncated Unary) code to binarize mode information of a current block, and then performs entropy encoding on a binary flag after the binarization by using a CABAC (~~Context-Cased Binary Arithmetic Coding,~~ Ceontext-Aadaptive Bbinary Aarithmetic Ceoding) technology. For example, under an HE configuration condition, the six modes, namely, DM, LM, vertical, horizontal, DC, and planar modes may be presented by a TU code word 0, 10, 110, 1110, 11110, and 11111, respectively; under an LC configuration condition, the five modes, namely, DM, vertical, horizontal, DC, and planar modes may be represented by a TU code word 0, 10, 110, 1110, and 1111, respectively. A decoding end determines a prediction mode for a chroma component of a current block according to the TU code word obtained by parsing.

[0029] In fact, the TU code word may be regarded as a group of binary flags in series. In an entropy encoding or entropy decoding process, whether to continue to encode or decode the following binary flags is determined according to a value of each binary flag one by one. In addition, each binary flag in the TU code word represents a binarized determination. For example, under an LC encoding configuration condition, a TU code having a maximum value 5 is used. That is, the TU code includes a maximum of four binary flags. The first binary flag is used to determine whether a mode of a current block is a DM mode; the second binary flag is used to determine whether the ~~mode of the current block~~chroma component prediction mode of the current block is a vertical mode; the third binary flag is used to determine whether the ~~mode of the current block~~chroma component prediction mode of the current block is a horizontal mode; and the fourth binary flag is used to determine whether the ~~mode of the current block~~chroma component prediction mode of the current block is a DC mode. If the ~~mode of the current block~~chroma component prediction mode of the current block is not among the four modes described above, it must be a

planar mode.

[0030] When the TU code word is used to encode and decode chroma component intra prediction mode information, a value of a previous binary flag is the basis for determining whether to encode or decode a next binary flag. This conditional encoding or decoding increases complexity of entropy encoding or entropy decoding.

[0031] The DM mode is used with a high probability, which reduces importance of other modes than the DM_mode. Moreover, it is possible that the DM mode is the same as the planar mode, the DC mode, the horizontal mode, or the vertical mode, indicating that a large redundancy exists in a set of available modes, where the redundancy affects efficiency of compressing video images.

[0032] There are many available modes, where six modes are available under an HE condition, and five modes are available under an LC condition. This increases calculation complexity in a process for an encoding end to select a mode.

[0033] An embodiment of the present invention provides an encoding or decoding method to solve the above problem.

[0034] FIG. 1 is a schematic flowchart of an encoding or decoding method 10 according to an embodiment of the present invention, including the following content.

[0035] 11. Extract first information in a bitstream.

[0036] The first information includes information for indicating whether a chroma component intra prediction mode is a DM mode or an LM mode.

[0037] 12. Determine a chroma component intra prediction mode according to the first information.

[0038] 13. When the chroma component intra prediction mode cannot be determined according to the first information, extract second information in the bitstream.

[0039] 14. Determine the chroma component intra prediction mode according to the second information.

[0040] The second information is used to indicate a remaining mode of the chroma component intra prediction mode, where the remaining mode is one of available chroma component intra prediction modes other than a mode that may be determined according to the first information.

[0061] As an implementation method, step 32 may replace steps 27 and 28.

[0062] As another implementation method, step 29 is optional, and step 31 may be directly performed after step 32 or step 28.

[0063] 32. Use a default mode as the chroma component intra prediction mode, where the default mode is one of predefined luma component intra prediction modes.

[0064] In the above technical solutions, with respect to different technologies that are used, for example, a method for carrying information, multiple steps described above may be combined, or one step may be divided and completed in multiple steps. The present invention sets no limit thereto. The implementation methods shall fall within the protection scope of the present invention.

[0065] The embodiment of the present invention may reduce the encoding information of a chroma mode and optimize sorting for the information to reduce encoding or decoding steps, thereby reducing encoding or decoding complexity and improving decoding efficiency.

[0066] Both the chroma component intra prediction mode and the luma component intra prediction mode are about the current block. Therefore, in the following embodiments, they are respectively referred to as a current block chroma mode and a current block luma mode for short, which generally may also be respectively referred to as a chroma mode and a luma mode for short. In a standard, generally, there are more modes in a luma component intra prediction mode set than modes in a chroma component intra prediction mode set. FIG. 3 is a schematic flowchart according to an embodiment 300 of the present invention.

[0067] In the embodiment of the present invention, a binary flag is used to carry first information. The first information may include information for indicating whether a current block chroma mode is a DM mode by using a binary flag, which is expressed as DM information.

[0068] The first information may also include information for indicating whether a current block chroma mode is an LM mode by using a binary flag, which is expressed as LM information. If the LM mode is not an available mode in chroma component intra prediction mode sets, a bitstream contains no LM information, and an encoding end and a decoding end perform no encoding or decoding operation on LM information.

[0069] The second information is used to indicate a remaining mode of the chroma

method described above. If a current block chroma mode is determined as a DM mode according to the DM information, end the mode determining procedure; otherwise, perform step 320.

[0076] 320. Extract LM information from the bitstream by using the entropy decoding method described above. If the current block chroma mode is determined as an LM mode according to the LM information, end the mode determining procedure; otherwise, perform step 330.

[0077] It should be noted that, if the LM mode is not included in available modes for chroma component intra prediction, there is no LM information in the bitstream. A decoding end does not need to perform a parsing operation and this step may be skipped. The prior art may be used to determine whether the LM mode is included in the available modes for chroma component intra prediction.

[0078] 330. Extract second information from the bitstream by using the entropy decoding method described above. The second information is an FL code word having a length of 2.

[0079] 340. Determine remaining mode information according to the second information, and use a remaining mode as a current block chroma mode.

[0080] The current block chroma mode is determined according to a corresponding relationship between the FL code word and the remaining mode. One available corresponding relationship is described above.

[0081] Alternatively, if a current block luma mode is the same as the current block chroma mode determined in the remaining modes according to the above method, a replacement mode is used to replace the current block chroma mode used in step 340. A mode which is different from modes in a chroma component intra prediction mode set may be selected as the replacement mode. For example, a directional prediction mode from upper-right to lower-left may be used as the replacement mode. When the current block luma mode is not the same as the current block chroma mode determined from the remaining modes according to the above method, the current block chroma mode used in step 340 remains unchanged.

[0082] After the current block chroma mode is determined, the mode determining procedure may be ended.

[0083] In addition, in order to remove a redundancy in available prediction modes for a chroma component, alternatively, the set of available prediction modes for the chroma component includes only three chroma component prediction modes, that is, a DM mode, an LM mode, and a default mode. In such cases, step 360 may be used to replace steps 330 and 340, where other steps remain unchanged. In such cases, it is known according to the previous steps that the current block chroma mode is neither the DM mode nor the LM mode. The default mode may be one of predefined luma component intra prediction modes.

350. If the current block luma mode is the same as the current block chroma mode, use a replacement mode to replace the current block chroma mode.

[0084] 360. Use a default mode as the current block chroma mode.

[0085] The embodiment of the present invention may reduce the encoding information of a chroma mode and optimize sorting for the information to reduce encoding or decoding steps, thereby reducing encoding or decoding complexity and improving decoding efficiency.

[0086] FIG. 4 is a schematic flowchart according to another embodiment 40 of the present invention. The difference from the embodiment 300 lies in that a TU code word having a maximum value 2 is used to carry first information, which is used to indicate whether a current block chroma mode is a DM mode or an LM mode. The TU code word may be 0, 10, and 11. The three code words may respectively indicate that the current block chroma mode is a DM mode, that the current block chroma mode is an LM mode, and that the current block chroma mode is neither the DM mode nor the LM mode, that is, the current block is one in a remaining mode set. It should be noted that if the LM mode is not included in available modes for chroma component intra prediction, the TU code word may be rolled back to a binary flag, where the binary flag indicates whether the current block chroma mode is a DM mode.

[0087] Similarly, an FL (Fix Length, fixed-length) code word having a length of 2 is used to carry second information to represent a remaining mode in a chroma prediction mode. Other aspects, for example, an entropy decoding method, are the same as the embodiment 300.

[0088] 41. Determine a current block chroma mode by extracting a TU code word indicating whether the current block chroma mode is a DM mode or an LM mode.

[0089] The entropy decoding method described in the embodiment 300 is used to extract a TU code word having a maximum value 2 from a bitstream. If the current block chroma mode is determined as a DM mode according to the TU code word, end the mode

determining procedure; if the current block chroma mode is determined as an LM mode according to the TU code word, end the mode determining procedure; otherwise, the current block chroma mode is determined neither as the DM mode nor as the LM mode according to the TU code word, and step 42 is performed.

[0090] It should be noted that if the LM mode is not included in available modes for chroma component intra prediction, the TU code word having the maximum value 2 is not parsed from the bitstream; instead, a binary flag is extracted from the bitstream according to the method in the embodiment 300. If the current block chroma mode is determined as a DM mode according to the binary flag, end the mode determining procedure; otherwise, perform step 42.

[0091] 42. Extract second information.

[0092] Similar to step 330, the entropy decoding method described in the embodiment 300 is used to extract the second information from the bitstream. The second information is an FL code word having a length of 2.

[0093] 43. Determine a remaining mode according to the second information, and use the remaining mode as a current block chroma mode.

[0094] Similar to 340 in the embodiment 300, the current block chroma mode is determined according to a corresponding relationship between the FL code word and the remaining mode. One available corresponding relationship is described above.

[0095] Alternatively, in step 44, if a current block luma mode is the same as the current block chroma mode determined from the remaining modes according to the above method, a replacement mode is used to replace the current block chroma mode used in step 43. A mode which is different from all modes in a chroma component intra prediction mode set may be selected as the replacement mode. For example, a directional prediction mode from upper-right to lower-left may be used as the replacement mode. When the current block luma mode is not the same as the current block chroma mode determined from the remaining modes according to the above method, the current block chroma mode used in step 43 remains unchanged.

[0096] After the current block chroma mode is determined, the mode determining procedure may be ended.

component intra prediction modes.

[0116] Alternatively, when the first extracting unit 51 extracts the first information carried by a TU code having a maximum value 2, the second extracting unit 53 is specifically configured to extract second information in the bitstream when the first determining unit 52 determines that the TU code indicates that the chroma component intra prediction mode is neither a DM mode nor an LM mode, and the second determining unit 54 is specifically configured to determine the chroma component intra prediction mode according to the second information extracted by the second extracting unit 53.

[0117] Alternatively, when the second~~first~~ extracting unit 51 extracts the second information carried by a fixed-length (FL) code, the second determining unit 53 is specifically configured to determine a remaining mode by using the FL code, and use the remaining mode as the chroma component intra prediction mode. The second~~first~~ extracting unit 51 may extract the second information carried by one FL code by using an equiprobability (by-pass) mode.

[0118] FIG. 6 is a schematic block diagram of another encoding or decoding apparatus 60 according to an embodiment of the present invention. As an implementation manner, the apparatus 60 includes a first extracting unit 61, a first determining unit 62, a second extracting unit 63, a second determining unit 64, which are the same as or similar to the first extracting unit 51, the first determining unit 52, the second extracting unit 53, and the second determining unit 54 of the apparatus 50. The difference lies in that the apparatus 60 may further include a third determining unit 65 and/or a fourth determining unit 66.

[0119] The first extracting unit 61 is configured to extract first information in a bitstream.

[0120] The first determining unit 62 is configured to determine a chroma component intra prediction mode according to the first information extracted by the first extracting unit 61.

[0121] The second extracting unit 63 is configured to, when the first determining unit 61 cannot determine the chroma component intra prediction mode according to the first information, extract second information in the bitstream,~~ and.~~

[0122] The second determining unit 64 is configured to determine the chroma component intra prediction mode according to the second information extracted by the second extracting unit 63.

[0123] The third determining unit 65 is configured to determine whether a chroma

CLAIMS

What is claimed is:

1. An encoding or decoding method, comprising:

extracting first information in a bitstream;

determining a chroma component intra prediction mode according to the first information;

when the chroma component intra prediction mode cannot be determined according to the first information, extracting second information in the bitstream; and

determining the chroma component intra prediction mode according to the second information, wherein

the first information comprises information for indicating whether the chroma component intra prediction mode is a DM mode or an LM mode; and

the second information is used to indicate a remaining mode of the chroma component intra prediction mode, wherein the remaining mode is one of available chroma component intra prediction modes other than a mode that may be determined according to the first information.

2. The method according to claim 1, wherein when the first information comprises DM information carried by a binary flag, wherein the DM information is used to indicate whether the chroma component intra prediction mode is a DM mode, the method comprises:

when it is determined that the DM information indicates that the chroma component intra prediction mode is a DM mode, using the DM mode as the chroma component intra prediction mode; or

when it is determined that the DM information indicates that the chroma component intra prediction mode is not a DM mode, using a default mode as the chroma component intra prediction mode, wherein the default mode is one of predefined luma component intra prediction modes; or

when it is determined that the DM information indicates that the chroma component intra prediction mode is not a DM mode, extracting the second information in the bitstream,

and determining the chroma component intra prediction mode according to the second information.

3. The method according to claim 2, wherein when the DM information of the first information indicates that the chroma component intra prediction mode is not a DM mode, and the first information further comprises LM information carried by a binary flag, wherein the LM information is used to indicate whether the chroma component intra prediction mode is an LM mode, the determining the chroma component intra prediction mode comprises:

when it is determined that the LM information indicates that the chroma component intra prediction mode is an LM mode, using the LM mode as the chroma component intra prediction mode; or

when it is determined that the LM information indicates that the chroma component intra prediction mode is not an LM mode, using a default mode as the chroma component intra prediction mode, wherein the default mode is one of predefined luma component intra prediction modes; or

determining that the LM information indicates that the chroma component intra prediction mode is not an LM mode, extracting the second information in the bitstream, and determining the chroma component intra prediction mode according to the second information.

4. The method according to claim 1, wherein when the first information is carried by a truncated unary TU code with a maximum value 2, the determining the chroma component intra prediction mode comprises:

when it is determined that the TU code indicates that the chroma component intra prediction mode is a DM mode, using the DM mode as the chroma component intra prediction mode; or

when it is determined that the TU code indicates that the chroma component intra prediction mode is an LM mode, using the LM mode as the chroma component intra prediction mode; or when it is determined that the TU code indicates that the chroma component intra prediction mode is neither a DM mode nor an LM mode, using a default mode as the chroma component intra prediction mode, wherein the default mode is one of predefined luma component intra prediction modes; or

when it is determined that the TU code indicates that the chroma component intra prediction mode is neither a DM mode nor an LM mode, extracting the second information in the bitstream, and determining the chroma component intra prediction mode according to the second information.

5. The method according to claim 1, wherein when the second information is carried by a fixed-length FL code, the extracting the second information in the bitstream and determining the chroma component intra prediction mode comprises:

extracting an FL code in the bitstream, determining a remaining mode by using the FL code, and using the remaining mode as the chroma component intra prediction mode.

6. The method according to claim 5, wherein the extracting the second information in the bitstream comprises:

extracting the FL code in the bitstream by using an equiprobability by-pass mode.

7. The method according to claim 1, wherein before the extracting the second information, the method further comprises:

determining whether a chroma component intra prediction mode set comprises an LM mode; and

when it is determined that the chroma component intra prediction mode set does not comprise an LM mode, comprising, in the first information, only information for indicating whether the chroma component intra prediction mode is a DM mode; or

when it is determined that the chroma component intra prediction mode set comprises an LM mode, comprising, in the first information, information for indicating whether the chroma component intra prediction mode is a DM mode or an LM mode;

8. The method according to any one of claim 1 to claim 7, further comprising:

when the determined chroma component intra prediction mode is neither the DM mode nor the LM mode, determining whether a luma component intra prediction mode is the same as the determined chroma component intra prediction mode; and

when the luma component intra prediction mode is the same as the determined chroma component intra prediction mode, using a replacement mode to replace the determined chroma component intra prediction mode, wherein the replacement mode is one of modes that are different from modes in the chroma component intra prediction mode set; or

when the luma component intra prediction mode is different from the chroma component intra prediction mode in use, keeping the determined chroma component intra prediction mode unchanged.

9. An encoding or decoding apparatus, comprising:

a first extracting unit, configured to extract first information in a bitstream;

a first determining unit, configured to determine a chroma component intra prediction mode according to the first information extracted by the first extracting unit;

a second extracting unit, configured to, when the first determining unit cannot determine the chroma component intra prediction mode according to the first information, extract second information in the bitstream; and

a second determining unit, configured to determine the chroma component intra prediction mode according to the second information extracted by the second extracting unit, wherein

the first information comprises information for indicating whether the chroma component intra prediction mode is a DM mode or an LM mode; and

the second information is used to indicate a remaining mode of the chroma component intra prediction mode, wherein the remaining mode is one of available chroma component intra prediction modes other than a mode that may be determined according to the first information.

10. The apparatus according to claim 9, wherein:

when the first information extracted by the first extracting unit comprises DM information carried by a binary flag, wherein the DM information is used to indicate whether the chroma component intra prediction mode is a DM mode,

the first determining unit is specifically configured to, when it is determined that the DM information indicates that the chroma component intra prediction mode is a DM mode, use the DM mode as the chroma component intra prediction mode; or the first determining unit is specifically configured to, when it is determined that the DM information indicates that the chroma component intra prediction mode is not a DM mode, use a default mode as the chroma component intra prediction mode, wherein the default mode is one of predefined luma component intra prediction modes; or

the second extracting unit is specifically configured to, when the first determining unit determines that the DM information indicates that the chroma component intra prediction mode is not a DM mode, extract the second information in the bitstream; and

the second determining unit is specifically configured to determine the chroma component intra prediction mode according to the second information extracted by the second extracting unit.

11. The apparatus according to claim 10, wherein when the DM information of the first information extracted by the first extracting unit indicates that the chroma component intra prediction mode is not a DM mode, and the first information further comprises LM information carried by a binary flag, wherein the LM information is used to indicate whether the chroma component intra prediction mode is an LM mode, the determining the chroma component intra prediction mode comprises:

the first determining unit is specifically configured to, when it is determined that the LM information indicates that the chroma component intra prediction mode is an LM mode, use the LM mode as the chroma component intra prediction mode; or

the first determining unit is specifically configured to, when it is determined that the LM information indicates that the chroma component intra prediction mode is not an LM mode, use a default mode as the chroma component intra prediction mode, wherein the default mode is one of predefined luma component intra prediction modes; or

the first determining unit is specifically configured to, when it is determined that the LM information indicates that the chroma component intra prediction mode is not an LM mode, extract the second information in the bitstream; and

the second determining unit is specifically configured to determine the chroma component intra prediction mode according to the second information extracted by the second extracting unit.

12. The apparatus according to claim 9, wherein when the first extracting unit extracts the first information carried by a truncated unary TU code with a maximum value 2, the apparatus comprises:

the first determining unit, specifically configured to, when it is determined that the TU code indicates that the chroma component intra prediction mode is a DM mode, use the DM

mode as the chroma component intra prediction mode; or

the first determining unit, specifically configured to, when it is determined that the TU code indicates that the chroma component intra prediction mode is an LM mode, use the LM mode as the chroma component intra prediction mode; or

the first determining unit, specifically configured to, when it is determined that the TU code indicates that the chroma component intra prediction mode is neither a DM mode nor an LM mode, use a default mode as the chroma component intra prediction mode, wherein the default mode is one of predefined luma component intra prediction modes; or

the second extracting unit, specifically configured to, when the first determining unit determines that the TU code indicates that the chroma component intra prediction mode is neither a DM mode nor an LM mode, extract the second information in the bitstream; and

the second determining unit, specifically configured to determine the chroma component intra prediction mode according to the second information extracted by the second extracting unit.

13. The apparatus according to claim 9, wherein:

when the second information is carried by a fixed-length FL code,

the first extracting unit is specifically configured to extract the FL code in the bitstream, and the second determining unit is specifically configured to determine a remaining mode by using the FL code extracted by the first extracting unit, and use the remaining mode as the chroma component intra prediction mode.

14. The apparatus according to claim 13, wherein:

the first extracting unit is specifically configured to extract the second information carried by one FL code by using an equiprobability by-pass mode.

15. The apparatus according to claim 9, further comprising:

a third determining unit, configured to determine whether a chroma component intra prediction mode set comprises an LM mode; and

when the third determining unit determines that the chroma component intra prediction mode set does not comprise an LM mode, the first information extracted by the first extracting unit comprises only information for indicating whether the chroma component intra prediction mode is a DM mode; or

when the third determining unit determines that the chroma component intra prediction mode set comprises an LM mode, the first information extracted by the first extracting unit comprises information for indicating whether the chroma component intra prediction mode is a DM mode or an LM mode.

16. The apparatus according to claim 9 to claim 16, further comprising:

a fourth determining unit, configured to, when the determined chroma component intra prediction mode is neither the DM mode nor the LM mode, determine whether a luma component intra prediction mode is the same as the chroma component intra prediction mode in use; and

when the fourth determining unit determines that the luma component intra prediction mode is the same as the determined chroma component intra prediction mode, use a replacement mode to replace the chroma component intra prediction mode, wherein the replacement mode is one of modes that are different from modes in the chroma component intra prediction mode set; or

when the fourth determining unit determines that the luma component intra prediction mode is not the same as the chroma component intra prediction mode in use, keep the determined chroma component intra prediction mode unchanged.

CLAIMS

1. A decoding method, the method comprising:

extracting first information in a bitstream;

determining a chroma component intra prediction mode according to the first information;

when the chroma component intra prediction mode cannot be determined according to the first information, extracting second information in the bitstream; and

determining the chroma component intra prediction mode according to the second information, wherein

the first information comprises information for indicating whether the chroma component intra prediction mode is a DM mode or an LM mode; and

the second information is used to indicate a remaining mode of the chroma component intra prediction mode, wherein the remaining mode is one of available chroma component intra prediction modes other than a mode that may be determined according to the first information.

2. The method according to claim 1, wherein when the first information comprises DM information carried by a binary flag, wherein the DM information is used to indicate whether the chroma component intra prediction mode is a DM mode, the method comprises:

when it is determined that the DM information indicates that the chroma component intra prediction mode is a DM mode, using the DM mode as the chroma component intra prediction mode; or

when it is determined that the DM information indicates that the chroma component intra prediction mode is not a DM mode, using a default mode as the chroma component intra prediction mode, wherein the default mode is one of predefined luma component intra prediction modes; or

when it is determined that the DM information indicates that the chroma component intra prediction mode is not a DM mode, extracting the second information in the bitstream, and determining the chroma component intra prediction mode according to the second information.

3. The method according to claim 2, wherein when the DM information of the first information indicates that the chroma component intra prediction mode is not a DM mode, and the first information further comprises LM information carried by a binary flag, wherein the LM information is used to indicate whether the chroma component intra prediction mode is an LM mode, the determining the chroma component intra prediction mode comprises:

when it is determined that the LM information indicates that the chroma component intra prediction mode is an LM mode, using the LM mode as the chroma component intra prediction mode; or

when it is determined that the LM information indicates that the chroma component intra prediction mode is not an LM mode, using a default mode as the chroma component intra prediction mode, wherein the default mode is one of predefined luma component intra prediction modes; or

when it is determined that the LM information indicates that the chroma component intra prediction mode is not an LM mode, extracting the second information in the bitstream, and determining the chroma component intra prediction mode according to the second information.

4. The method according to claim 1, wherein when the first information is carried by a truncated unary TU code with a maximum value 2, the determining the chroma component intra prediction mode comprises:

when it is determined that the TU code indicates that the chroma component intra prediction mode is a DM mode, using the DM mode as the chroma component intra prediction mode; or

when it is determined that the TU code indicates that the chroma component intra prediction mode is an LM mode, using the LM mode as the chroma component intra prediction mode; or

when it is determined that the TU code indicates that the chroma component intra prediction mode is neither a DM mode nor an LM mode, using a default mode as the chroma component intra prediction mode, wherein the default mode is one of predefined luma component intra prediction modes; or

when it is determined that the TU code indicates that the chroma component intra prediction mode is neither a DM mode nor an LM mode, extracting the second information in the bitstream, and determining the chroma component intra prediction mode according to the second information.

5. The method according to claim 1, wherein when the second information is carried by a fixed-length FL code, the extracting the second information in the bitstream and determining the chroma component intra prediction mode comprises:

extracting an FL code in the bitstream, determining a remaining mode by using the FL code, and using the remaining mode as the chroma component intra prediction mode.

6. The method according to claim 5, wherein extracting the second information in the bitstream comprises:

extracting the FL code in the bitstream by using an equiprobability by-pass mode.

7. The method according to claim 1, wherein before extracting the second information, the method further comprises:

determining whether a chroma component intra prediction mode set comprises an LM mode; and

when it is determined that the chroma component intra prediction mode set does not comprise an LM mode, comprising, in the first information, only information for indicating whether the chroma component intra prediction mode is a DM mode; or

when it is determined that the chroma component intra prediction mode set comprises an LM mode, comprising, in the first information, information for indicating whether the chroma component intra prediction mode is a DM mode or an LM mode.

8. The method according to claim 1, further comprising:

when the determined chroma component intra prediction mode is neither the DM mode nor the LM mode, determining whether a luma component intra prediction mode is the same as the determined chroma component intra prediction mode; and

when the luma component intra prediction mode is the same as the determined chroma component intra prediction mode, using a replacement mode to replace the determined chroma component intra prediction mode, wherein the replacement mode is one of modes that are different from modes in the chroma component intra prediction mode set; or

when the luma component intra prediction mode is different from the determined chroma component intra prediction mode, keeping the determined chroma component intra prediction mode unchanged.

9. The method according to claim 2, further comprising:

when the determined chroma component intra prediction mode is neither the DM mode nor the LM mode, determining whether a luma component intra prediction mode is the same as the determined chroma component intra prediction mode; and

when the luma component intra prediction mode is the same as the determined chroma component intra prediction mode, using a replacement mode to replace the determined chroma component intra prediction mode, wherein the replacement mode is one of modes that are different from modes in the chroma component intra prediction mode set; or

when the luma component intra prediction mode is different from the determined chroma component intra prediction mode, keeping the determined chroma component intra prediction mode unchanged.

10. The method according to claim 3, further comprising:

when the determined chroma component intra prediction mode is neither the DM mode nor the LM mode, determining whether a luma component intra prediction mode is the same as the determined chroma component intra prediction mode; and

when the luma component intra prediction mode is the same as the determined chroma component intra prediction mode, using a replacement mode to replace the determined chroma component intra prediction mode, wherein the replacement mode is one of modes that are different from modes in the chroma component intra prediction mode set; or

when the luma component intra prediction mode is different from the determined chroma component intra prediction mode, keeping the determined chroma component intra prediction mode unchanged.

11. A decoding apparatus, the apparatus comprising:

a first extracting unit, configured to extract first information in a bitstream;

a first determining unit, configured to determine a chroma component intra prediction mode according to the first information extracted by the first extracting unit;

a second extracting unit, configured to, when the first determining unit cannot determine the chroma component intra prediction mode according to the first information, extract second information in the bitstream; and

a second determining unit, configured to determine the chroma component intra prediction mode according to the second information extracted by the second extracting unit, wherein

the first information comprises information for indicating whether the chroma component intra prediction mode is a DM mode or an LM mode; and

the second information is used to indicate a remaining mode of the chroma component intra prediction mode, wherein the remaining mode is one of available chroma component intra prediction modes other than a mode that may be determined according to the first information.

12. The apparatus according to claim 11, wherein:

when the first information extracted by the first extracting unit comprises DM information carried by a binary flag, wherein the DM information is used to indicate whether the chroma component intra prediction mode is a DM mode,

the first determining unit is configured to, when it is determined that the DM information indicates that the chroma component intra prediction mode is a DM mode, use the DM mode as the chroma component intra prediction mode; or the first determining unit is configured to, when it is determined that the DM information indicates that the chroma component intra prediction mode is not a DM mode, use a default mode as the chroma component intra prediction mode, wherein the default mode is one of predefined luma component intra prediction modes; or

the second extracting unit is configured to, when the first determining unit determines that the DM information indicates that the chroma component intra prediction mode is not a DM mode, extract the second information in the bitstream; and

the second determining unit is configured to determine the chroma component intra prediction mode according to the second information extracted by the second extracting unit.

13. The apparatus according to claim 12, wherein when the DM information of the first information extracted by the first extracting unit indicates that the chroma component intra prediction mode is not a DM mode, and the first information further comprises LM information carried by a binary flag, wherein the LM information is used to indicate whether the chroma component intra prediction mode is an LM mode, the determining the chroma component intra prediction mode comprises:

the first determining unit is configured to, when it is determined that the LM information indicates that the chroma component intra prediction mode is an LM mode, use the LM mode as the chroma component intra prediction mode; or

the first determining unit is configured to, when it is determined that the LM information indicates that the chroma component intra prediction mode is not an LM mode, use a default mode as the chroma component intra prediction mode, wherein the default mode is one of predefined luma component intra prediction modes; or

the second extracting unit is configured to extract, when the first determining unit determines that the LM information indicates that the chroma component intra prediction mode is not the LM mode, the second information in the bitstream; and

the second determining unit is configured to determine the chroma component intra prediction mode according to the second information extracted by the second extracting unit.

14. The apparatus according to claim 11, wherein when the first extracting unit extracts the first information carried by a truncated unary TU code with a maximum value 2, the apparatus comprises:

the first determining unit, configured to, when it is determined that the TU code indicates that the chroma component intra prediction mode is a DM mode, use the DM mode as the chroma component intra prediction mode; or

the first determining unit, configured to, when it is determined that the TU code indicates that the chroma component intra prediction mode is an LM mode, use the LM mode as the chroma component intra prediction mode; or

the first determining unit, configured to, when it is determined that the TU code indicates that the chroma component intra prediction mode is neither a DM mode nor an LM mode, use a default mode as the chroma component intra prediction mode, wherein the default mode is one of predefined luma component intra prediction modes; or

the second extracting unit, configured to, when the first determining unit determines that the TU code indicates that the chroma component intra prediction mode is neither a DM mode nor an LM mode, extract the second information in the bitstream; and

the second determining unit, configured to determine the chroma component intra prediction mode according to the second information extracted by the second extracting unit.

15. The apparatus according to claim 11, wherein:

when the second information is carried by a fixed-length FL code,

the second extracting unit is configured to extract the FL code in the bitstream, and the second determining unit is configured to determine a remaining mode by using the FL code extracted by the second extracting unit, and use the remaining mode as the chroma component intra prediction mode.

16. The apparatus according to claim 15, wherein:

the second extracting unit is configured to extract the second information carried by one FL code by using an equiprobability by-pass mode.

17. The apparatus according to claim 11, further comprising:

a third determining unit, configured to determine whether a chroma component intra prediction mode set comprises an LM mode; and

when the third determining unit determines that the chroma component intra prediction mode set does not comprise an LM mode, the first information extracted by the first extracting unit comprises only information for indicating whether the chroma component intra prediction mode is a DM mode; or

when the third determining unit determines that the chroma component intra prediction mode set comprises an LM mode, the first information extracted by the first extracting unit comprises information for indicating whether the chroma component intra prediction mode is a DM mode or an LM mode.

18. The apparatus according to claim 11, further comprising:

a fourth determining unit, configured to, when the determined chroma component intra prediction mode is neither the DM mode nor the LM mode, determine whether a luma component intra prediction mode is the same as the chroma component intra prediction mode in use; and

when the fourth determining unit determines that the luma component intra prediction mode is the same as the determined chroma component intra prediction mode, use a replacement mode to replace the chroma component intra prediction mode, wherein the replacement mode is one of modes that are different from modes in the chroma component intra prediction mode set; or

when the fourth determining unit determines that the luma component intra prediction mode is not the same as the chroma component intra prediction mode in use, keep the determined chroma component intra prediction mode unchanged.

19. The apparatus according to claim 12, further comprising:

a fourth determining unit, configured to, when the determined chroma component intra prediction mode is neither the DM mode nor the LM mode, determine whether a luma component intra prediction mode is the same as the chroma component intra prediction mode in use; and

when the fourth determining unit determines that the luma component intra prediction mode is the same as the determined chroma component intra prediction mode, use a replacement mode to replace the chroma component intra prediction mode, wherein the replacement mode is one of modes that are different from modes in the chroma component intra prediction mode set; or

when the fourth determining unit determines that the luma component intra prediction mode is not the same as the chroma component intra prediction mode in use, keep the determined chroma component intra prediction mode unchanged.

20. The apparatus according to claim 13, further comprising:

a fourth determining unit, configured to, when the determined chroma component intra prediction mode is neither the DM mode nor the LM mode, determine whether a luma component intra prediction mode is the same as the chroma component intra prediction mode in use; and

when the fourth determining unit determines that the luma component intra prediction mode is the same as the determined chroma component intra prediction mode, use a replacement mode to replace the chroma component intra prediction mode, wherein the replacement mode is one of modes that are different from modes in the chroma component intra prediction mode set; or

when the fourth determining unit determines that the luma component intra prediction mode is not the same as the chroma component intra prediction mode in use, keep the determined chroma component intra prediction mode unchanged.