CORESET in another portion of the plurality of CORESETs is configured with a plurality of TCI states.

[00196] It is noted that each TCI state includes one QCL Type D.

[00197] FIG. 4 is a block diagram of a PDCCH transmission apparatus according to an embodiment. The apparatus has a function of realizing the terminal or network device in the above method embodiments, and the function can be realized by hardware or by executing corresponding software by hardware. As illustrated in FIG. 4, the apparatus includes: a processing module 401 and a transceiver module 402.

[00198] The processing module 401 is configured to determine a CORESET priority rule, and select at least one CORESET from a plurality of CORESETs based on the CORESET priority rule.

[00199] The transceiver module 402 is configured to perform PDCCH transmission at an overlapped PDCCH monitor occasion based on the at least one CORESET.

[00200] Alternatively, determining the CORESET priority rule includes at least one of:

[00201] determining the CORESET priority rule based on a serving cell index corresponding to each CORESET;

[00202] determining the CORESET priority rule based on a CSS set index or CSS set pair index corresponding to each CORESET;

[00203] determining the CORESET priority rule based on a USS set index or USS set pair index corresponding to each CORESET; or

[00204] determining the CORESET priority rule based on a number of TCI states corresponding to each CORESET.

[00205] Alternatively, a CSS set pair index of a CSS set pair is a smaller index of CSS set indexes of two CSS sets; or a CSS set pair index of a CSS set pair is an index value for the CSS set pair configured by a network device, which has nothing to do with CSS set indexes of CSS sets in the CSS set pair.

[00206] Determining the CORESET priority rule based on the CSS set index or CSS set pair index corresponding to the CORESET, includes:

[00207] determining the CORESET priority rule satisfying that in all CSS sets that do not constitute any CSS set pair and all CSS set pairs, the smaller a CSS set index or CSS set pair index, the higher a corresponding CORESET priority; or

[00208] determining the CORESET priority rule satisfying that a CORESET priority corresponding to a CSS set pair is higher than a CORESET priority corresponding to a CSS set that does not constitute any CSS set pair; in all CSS set pairs, the smaller a CSS set pair index, the higher a corresponding CORESET priority; and in all CSS sets that do not constitute any CSS set pair, the smaller a CSS set index, the higher a corresponding CORESET priority;

[00209] in which a CSS set pair includes two linked CSS sets.

[00210] Alternatively, a USS set pair index of a USS set pair is a smaller index of USS set indexes of two USS sets; or a USS set pair index of a USS set pair is an index value for the USS set pair configured by a network device, which has nothing to do with USS set indexes of USS sets in the USS set pair.

[00211] Determining the CORESET priority rule based on the USS set index or USS set pair index corresponding to the CORESET, includes:

[00212] determining the CORESET priority rule satisfying that in all USS sets that do not constitute any USS set pair and all USS set pairs, the smaller a USS set index or USS set pair index, the higher a corresponding CORESET priority; or

[00213] determining the CORESET priority rule satisfying that a CORESET priority corresponding to a USS set pair is higher than a CORESET priority corresponding to a USS set that does not constitute any USS set pair; in all USS set pairs, the smaller a USS set pair index, the higher a corresponding CORESET priority; and in all USS sets that do not constitute any USS set pair, the smaller a USS set index, the higher a corresponding CORESET priority;

[00214] in which a USS set pair includes two linked USS sets.

[00215] Alternatively, the processing module 401 is configured to: determine whether one or more CORESETs each containing a CSS set exist in the plurality of CORESETs; and

[00216] determine the CORESET priority rule based on the CSS set index or CSS set pair index corresponding to each CORESET, and select the at least one CORESET from the one or more CORESETs each containing the CSS set, in which the one or more CORESETs each containing the CSS set exist in the plurality of CORESETs.

[00217] Alternatively, the processing module 401 is configured to: determine whether one or more CORESETs each containing a USS set exist in the plurality of CORESETs; and

[00218] determine the CORESET priority rule based on the USS set index or USS set pair index corresponding to each CORESET, select the at least one CORESET from the one or more CORESETs each containing the USS set, in which no CORESET containing the CSS set exists in

WHAT IS CLAIMED IS:

1. A physical downlink control channel (PDCCH) transmission method, comprising:

determining a control resource set (CORESET) priority rule;

selecting at least one CORESET from a plurality of CORESETs based on the CORESET priority rule; and

performing PDCCH transmission at an overlapped PDCCH monitor occasion based on the at least one CORESET.

2. The method of claim 1, wherein determining the CORESET priority rule, comprises at least one of:

determining the CORESET priority rule based on a serving cell index corresponding to each CORESET;

determining the CORESET priority rule based on a Common Search Space (CSS) set index or a CSS set pair index corresponding to each CORESET;

determining the CORESET priority rule based on a UE-specific Search Space (USS) set index or a USS set pair index corresponding to each CORESET; or

determining the CORESET priority rule based on a number of Transmission Configuration Indication (TCI) states corresponding to each CORESET.

3. The method of claim 2, wherein determining the CORESET priority rule based on the CSS set index or the CSS set pair index corresponding to each CORESET comprises:

determining the CORESET priority rule satisfying that in all CSS sets not constituting any CSS set pair and all CSS set pairs, the smaller a CSS set index or a CSS set pair index, the higher a corresponding CORESET priority; or

determining the CORESET priority rule satisfying that a CORESET priority corresponding to a CSS set pair is higher than a CORESET priority corresponding to a CSS set that does not constitute any CSS set pair; ~~in all CSS set pairs, the smaller a CSS set pair index, the higher a corresponding CORESET priority;~~ and in all CSS sets that do not constitute any CSS set pair, the smaller a CSS set index, the higher a corresponding CORESET priority;

wherein a CSS set pair comprises two linked CSS sets.

4. The method of claim 3, wherein a CSS set pair index of the CSS set pair is a smaller index of CSS set indexes of the two linked CSS sets, or a CSS set pair index of the CSS set pair is an index value for the CSS set pair configured by a network device.

5. The method of claim 2, wherein determining the CORESET priority rule based on

the USS set index or USS set pair index corresponding to each CORESET, comprises:

determining the CORESET priority rule satisfying that in all USS sets not constituting any USS set pair and all USS set pairs, the smaller a USS set index or a USS set pair index, the higher a corresponding CORESET priority; or

determining the CORESET priority rule satisfying that a CORESET priority corresponding to a USS set pair is higher than a CORESET priority corresponding to a USS set that does not constitute any USS set pair; ~~in all USS set pairs, the smaller a USS set pair index, the higher a corresponding CORESET priority;~~ and in all USS sets that do not constitute any USS set pair, the smaller a USS set index, the higher a corresponding CORESET priority;

wherein a USS set pair comprises two linked USS sets.

6. The method of claim 5, wherein a USS set pair index of the USS set pair is a smaller index of USS set indexes of the two linked USS sets, or a USS set pair index of the USS set pair is an index value for the USS set pair configured by a network device.

7. The method of any one of claims 2-6, wherein determining the CORESET priority rule and selecting the at least one CORESET from the plurality of CORESETs based on the CORESET priority rule, comprises:

determining whether one or more CORESETs each containing a CSS set exist in the plurality of CORESETs; and

determining the CORESET priority rule based on the CSS set index or the CSS set pair index corresponding to each CORESET, and selecting the at least one CORESET from the one or more CORESETs each containing the CSS set, wherein the one or more CORESETs each containing the CSS set exist in the plurality of CORESETs.

8. The method of claim 7, wherein determining the CORESET priority rule and selecting the at least one CORESET from the plurality of CORESETs based on the CORESET priority rule, further comprises:

determining whether one or more CORESETs each containing a USS set exist in the plurality of CORESETs; and

determining the CORESET priority rule based on the USS set index or the USS set pair index corresponding to each CORESET, and selecting the at least one CORESET from the one or more CORESETs each containing the USS set, wherein no CORESET containing the CSS set exists in the plurality of CORESETs, and the one or more CORESETs each containing the USS set exist in the plurality of CORESETs.

9. The method of claim 7, wherein a terminal participating in the PDCCH transmission is configured with a plurality of serving cells;

and determining the CORESET priority rule based on the CSS set index or the CSS set pair index corresponding to each CORESET, and selecting the at least one CORESET from the one or more CORESETs each containing the CSS set, comprises:

determining one or more CORESETs corresponding to all CSS set pairs from the one or more CORESETs each containing the CSS set;

selecting a serving cell with a smallest serving cell index from serving cells each having a CSS set pair; and

determining the CORESET priority rule based on the CSS set index or the CSS set pair index corresponding to each CORESET, and selecting the at least one CORESET from one or more CORESETs corresponding to the CSS set pair corresponding to the serving cell with the smallest serving cell index.

10. The method of claim 7, wherein a terminal participating in the PDCCH transmission is configured with a plurality of serving cells;

and determining the CORESET priority rule based on the CSS set index or the CSS set pair index corresponding to each CORESET, and selecting the at least one CORESET from the one or more CORESETs each containing the CSS set, comprises:

selecting a serving cell with a smallest serving cell index from serving cells each having a CSS set; and

determining the CORESET priority rule based on the CSS set index or the CSS set pair index corresponding to each CORESET, and selecting the at least one CORESET from one or more CORESETs corresponding to the CSS set or a CSS set pair corresponding to the serving cell with the smallest serving cell index.

11. The method of claim 8, wherein a terminal participating in the PDCCH transmission is configured with a plurality of serving cells;

and determining the CORESET priority rule based on the USS set index or the USS set pair index corresponding to each CORESET, and selecting the at least one CORESET from the one or more CORESETs each containing the USS set, comprises:

determining one or more CORESETs corresponding to all USS set pairs from the one or more CORESETs each containing the USS set;

selecting a serving cell with a smallest serving cell index from serving cells each having a USS set pair; and

determining the CORESET priority rule based on the USS set index or USS set pair index corresponding to each CORESET, and selecting the at least one CORESET from one or more CORESETs corresponding to the USS set pair corresponding to the serving cell with the smallest serving cell index.

12. The method of claim 8, wherein a terminal participating in the PDCCH transmission is configured with a plurality of serving cells;

and determining the CORESET priority rule based on the USS set index or the USS set pair index corresponding to each CORESET, and selecting the at least one CORESET from the one or more CORESETs each containing the USS set, comprises:

selecting a serving cell with a smallest serving cell index from serving cells each having a USS set; and

determining the CORESET priority rule based on the USS set index or the USS set pair index corresponding to each CORESET, and selecting the at least one CORESET from one or more CORESETs corresponding to the USS set or a USS set pair corresponding to the serving cell with the smallest serving cell index.

13. The method of any one of claims 1-12, wherein the method is executed by a terminal, and performing the PDCCH transmission at the overlapped PDCCH monitor occasion based on the at least one CORESET, comprises:

monitoring, at the overlapped PDCCH monitor occasion, a PDCCH in the ~~selected~~ at least one CORESET, and the PDCCH in another CORESET having at least one same Quasi Co Location (QCL) Type D with any CORESET in the ~~selected~~ at least one CORESET; or

determining at least one QCL Type D of the ~~selected~~ at least one CORESET, and monitoring, at the overlapped PDCCH monitor occasion, a PDCCH in a CORESET having a same QCL Type D as any one of the at least one QCL Type D.

14. The method of any one of claims 1-13, wherein,

the at least one CORESET comprises one CORESET, and the one CORESET is configured with a plurality of TCI states; or

the at least one CORESET comprises a plurality of CORESETs, and each CORESET in the plurality of CORESETs is configured with one TCI state; or

the at least one CORESET comprises a plurality of CORESETs, and each CORESET in a portion of the plurality of CORESETs is configured with one TCI state, and each CORESET in another portion of the plurality of CORESETs is configured with a plurality of TCI states.

15. The method of any one of claims 1-14, wherein the method is executed by a terminal, and the method further comprises:

receiving a radio resource control signaling sent by a network device, the radio resource control signaling comprising the plurality of CORESETs and configuration information of search space sets; and

determining the overlapped PDCCH monitor occasion based on the configuration information.

16. A physical downlink control channel (PDCCH) transmission apparatus, comprising:

a processing module, configured to determine a control resource set (CORESET) priority rule, and select at least one CORESET from a plurality of CORESETs based on the CORESET priority rule; and

a transceiver module, configured to perform PDCCH transmission at an overlapped PDCCH monitor occasion based on the at least one CORESET.

17. A communication device, comprising:

a processor;

a memory for storing instructions executable by the processor; wherein

the processor is configured to load and execute the executable instructions to implement the physical downlink control channel (PDCCH) transmission method of any one of claims 1-15.

18. A computer-readable storage medium for storing instructions, wherein when the instructions are executed by a processor, the physical downlink control channel (PDCCH) transmission method of any one of claims 1-15 is implemented.