

CLAIMS

What is claimed is:

1. A radio communication method, comprising:

in a case in which a first target control resource set (CORESET) is configured for a first cell in a target frequency band, determining, by a communication device, first target quasi co-location (QCL) information of the first target CORESET configured for the first cell;

determining, by the communication device based on the first target QCL information, QCL information of a physical downlink channel (PDCCH), a physical downlink shared channel (PDSCH), a cell-specific reference signal (CRS), a demodulation reference signal (DMRS) or a channel state information reference signal (CSI-RS) in at least one cell; and

determining, based on the first target QCL information, spatial relation information of a physical uplink control channel (PUCCH), a physical uplink shared channel (PUSCH), or a sounding reference signal (SRS) in the at least one cell.

2. The method according to claim 1, wherein the determining QCL information of a PDCCH, a PDSCH, a CRS, a DMRS, or a CSI-RS in at least one cell comprises:

determining QCL information of a PDCCH, a PDSCH, a CRS, a DMRS, or a CSI-RS on part or all of bandwidth parts (BWPs) of each of the at least one cell; and

the determining spatial relation information of a PUCCH, a PUSCH, or an SRS in the at least one cell comprises:

determining spatial relation information of a PUCCH, a PUSCH, or an SRS on part or all of BWPs of each of the at least one cell.

3. The method according to claim 1 or 2, wherein the at least one cell comprises the first cell; and the determining, based on the first target QCL information, QCL information of a PDCCH, a PDSCH, a CRS, a DMRS, or a CSI-RS in the at least one cell comprises: determining that QCL information of a PDCCH, a PDSCH, a CRS, a DMRS, or a CSI-RS in the first cell is the first target QCL information;

and/or,

wherein the at least one cell comprises the first cell; and the determining, based on the first target QCL information, QCL information of a PDCCH, a PDSCH, a CRS, a DMRS, or a CSI-RS in the at least one cell comprises: determining that a QCL information set of a PDCCH, a PDSCH, a CRS, a DMRS, or a CSI-RS in the first cell is a first QCL information set to which the first target QCL information belongs; and determining QCL information of the PDCCH, PDSCH, CRS, DMRS, or CSI-RS in the first cell from the QCL information set of the PDCCH, PDSCH, CRS, DMRS, or CSI-RS in the first cell;

and/or,

wherein the at least one cell comprises the first cell, a plurality of CORESETs are configured for the first cell, and the plurality of CORESETs comprise the first target CORESET; and the determining, based on the first target QCL information, QCL information of a PDCCH, a PDSCH, a CRS, a DMRS, or a CSI-RS in the at least one cell comprises: based on indication by a media access control control element (MAC CE), determining, from a first QCL information set to which the first target QCL information belongs, QCL information of a CORESET other than the first target CORESET in the plurality of CORESETs.

4. The method according to any one of claims 1 to 3, wherein the at least one cell comprises the first cell and a second cell, and the first target CORESET is not configured for the second cell; and

the determining, based on the first target QCL information, QCL information of a PDCCH, a PDSCH, a CRS, a DMRS, or a CSI-RS in the at least one cell comprises:

determining QCL information of a PDCCH, a PDSCH, a CRS, a DMRS, or a CSI-RS in the second cell based on the first target QCL information.

5. The method according to claim 4, wherein the determining QCL information of a PDCCH, a PDSCH, a CRS, a DMRS, or a CSI-RS in the second cell based on the first target QCL information comprises:

determining that the QCL information of the PDCCH, PDSCH, CRS, DMRS, or CSI-RS in the second cell is the first target QCL information;

and/or,

determining the QCL information of the PDCCH, PDSCH, CRS, DMRS, or CSI-RS in the second cell based on the first QCL information set to which the first target QCL information belongs.

6. The method according to any one of claims 1 to 5, wherein in a case in which the first target CORESET is configured for none of cells in a frequency band in which each of the at least one cell is located, the method further comprises:

determining a second QCL information set configured for a third cell; and

determining the QCL information of the PDCCH, PDSCH, CRS, DMRS, or CSI-RS in the at least one cell based on the second QCL information set.

7. The method according to claim 6, wherein the determining the QCL information of the PDCCH, PDSCH, CRS, DMRS, or CSI-RS in the at least one cell based on the second QCL information set comprises:

determining, from the second QCL information set, second target QCL information of a second target CORESET configured for the third cell; and determining that the QCL information of the PDCCH, PDSCH, CRS, DMRS, or CSI-RS in the at least one cell is the second target QCL information;

and/or,

determining that a QCL information set of the PDCCH, PDSCH, CRS, DMRS, or CSI-RS in the at least one cell is the second QCL information set; and determining the QCL information of the PDCCH, PDSCH, CRS, DMRS, or CSI-RS in the at least one cell from the QCL information set of the PDCCH, PDSCH, CRS, DMRS, or CSI-RS in the at least one cell.

8. The method according to claim 1 or 2, wherein the at least one cell comprises the first cell; and

the determining, based on the first target QCL information, spatial relation information of a PUCCH, a PUSCH, or an SRS in the at least one cell comprises:

determining a reference signal RS set corresponding to a first transmission configuration indication TCI state, wherein the first TCI state is used for indicating the first target QCL information; and determining spatial relation information of a PUCCH, a PUSCH, or an SRS in the first cell based on a source RS in the RS set;

and/or,

determining spatial relation information of a PUCCH, a PUSCH, or an SRS in the first cell based on a first QCL information set to which the first target QCL information belongs.

9. The method according to claim 8, wherein the determining spatial relation information of a PUCCH, a PUSCH, or an SRS in the first cell based on a first QCL information set to which the first target QCL information belongs comprises: determining a second TCI state used for indicating all QCL information in the first QCL information set; determining candidate spatial relation information of the PUCCH, PUSCH, or SRS in the first cell based on all source RSs in an RS set corresponding to the second TCI state; and determining the spatial relation information of the PUCCH, PUSCH, or SRS in the first cell from the candidate spatial relation information;

and/or

wherein a maximum quantity of pieces of configurable spatial relation information in a cell is greater than or equal to a quantity of pieces of QCL information in the first QCL information set; and the determining spatial relation information of a PUCCH, a PUSCH, or an SRS in the first cell based on a first QCL information set to which the first target QCL information belongs comprises: determining a second TCI state used for indicating all QCL information in the first QCL information set; determining candidate spatial relation information of the PUCCH, PUSCH,

or SRS in the first cell based on all source RSs in an RS set corresponding to the second TCI state; and determining the spatial relation information of the PUCCH, PUSCH, or SRS in the first cell from the candidate spatial relation information;

and/or,

wherein the determining spatial relation information of a PUCCH, a PUSCH, or an SRS in the first cell based on a first QCL information set to which the first target QCL information belongs comprises: determining a preset quantity of pieces of QCL information from the first QCL information set; and determining the spatial relation information of the PUCCH, PUSCH, or SRS in the first cell based on a source RS in an RS set corresponding to a third TCI state, wherein the third TCI state is used for indicating the preset quantity of pieces of QCL information.

10. The method according to any one of claims 8 to 9, wherein the at least one cell comprises the first cell and a fourth cell, and the first target CORESET is not configured for the fourth cell; and

the determining, based on the first target QCL information, spatial relation information of a PUCCH, a PUSCH, or an SRS in the at least one cell further comprises:

determining spatial relation information of a PUCCH, a PUSCH, or an SRS in the fourth cell based on the first target QCL information.

11. The method according to claim 10, wherein the determining spatial relation information of a PUCCH, a PUSCH, or an SRS in the fourth cell based on the first target QCL information comprises:

determining the first TCI state used for indicating the first target QCL information; and determining the spatial relation information of the PUCCH, PUSCH, or SRS in the fourth cell based on a source RS in the RS set corresponding to the first TCI state;

and/or,

determining the spatial relation information of the PUCCH, PUSCH, or SRS in the fourth cell based on the first QCL information set to which the first target QCL information belongs.

12. The method according to any one of claims 8 to 9, wherein in a case in which the first target CORESET is configured for none of cells in a frequency band in which each of the at least one cell is located, the method further comprises:

determining a third QCL information set configured in a fifth cell; and

determining the spatial relation information of the PUCCH, PUSCH, or SRS in the at least one cell based on the third QCL information set.

13. The method according to claim 1, wherein the at least one cell comprises the first cell and a sixth cell, and a QCL information set is not configured for the sixth cell; and the method further comprises:

determining that a QCL information set of the sixth cell is a first QCL information set to which the first target QCL information belongs; and

determining, based on the QCL information set of the sixth cell, QCL information of a PDCCH, a PDSCH, a CRS, a DMRS, or a CSI-RS in the sixth cell, and spatial relation information of a PUCCH, a PUSCH, or an SRS in the sixth cell.

14. The method according to any one of claims 3 to 7, wherein the at least one cell comprises the first cell and a seventh cell, and a QCL information set is not configured for the seventh cell; and the method further comprises:

determining that QCL information of a PDCCH, a PDSCH, a CRS, a DMRS, or a CSI-RS in the seventh cell is the QCL information of the downlink channel or downlink reference signal in the first cell; and/or

determining spatial relation information of a PUCCH, a PUSCH, or an SRS in the seventh cell based on the QCL information of the downlink channel or downlink reference signal in the first cell.

15. The method according to any one of claims 8 to 12, wherein the at least one cell comprises the first cell and an eighth cell, and a QCL information set is not configured for the eighth cell; and the method further comprises:

determining that spatial relation information of a PUCCH, a PUSCH, or an SRS in the eighth cell is the spatial relation information of the PUCCH, PUSCH, or SRS in the first cell.

16. The method according to any one of claims 1 to 15, wherein the determining first target QCL information of the first target CORESET configured for the first cell comprises:

determining, based on the indication by the MAC CE, the first target QCL information from the first QCL information set to which the first target QCL information belongs, wherein the first QCL information set is configured by a network device by using RRC signaling.

17. The method according to any one of claims 1 to 16, wherein an ID of the first target CORESET is 0.

18. A device, comprising a memory, a processor, and a computer program stored in the memory and capable of running on the processor, wherein when the computer program is executed by the processor, the processor is configured to implement:

in a case in which a first target control resource set (CORESET) is configured for a first cell in a target frequency band, determining first target quasi co-location (QCL) information of the first target CORESET configured for the first cell;

determining, based on the first target QCL information, QCL information of a physical downlink channel (PDCCH), a physical downlink shared channel (PDSCH), a cell-specific reference signal (CRS), a demodulation reference signal (DMRS) or a channel state information reference signal (CSI-RS) in at least one cell; and

determining, based on the first target QCL information, spatial relation information of a physical uplink control channel (PUCCH), a physical uplink shared channel (PUSCH), or a sounding reference signal (SRS) in the at least one cell.

19. The device according to claim 18, wherein the processor is further configured to implement:

determining QCL information of a PDCCH, a PDSCH, a CRS, a DMRS, or a CSI-RS on part or all of bandwidth parts (BWPs) of each of the at least one cell; and

the processor is further configured to implement:

determining spatial relation information of a PUCCH, a PUSCH, or an SRS on part or all of BWPs of each of the at least one cell.

20. The device according to claim 18 or 19, wherein an ID of the first target CORESET is 0.