CLAIMS

1. A method for determining an application time of a beam, performed by a terminal device, comprising:

receiving downlink control information (DCI) based on a physical downlink control channel (PDCCH) of a first carrier, wherein the DCI is configured to indicate a beam corresponding to a designated resource on a second carrier;

sending indication information, wherein the indication information is configured to indicate a receiving state of the DCI; and

determining an application time of the beam corresponding to the designated resource according to a sending time point of the indication information.

2. The method according to claim 1, wherein the designated resource comprises at least one of a channel or a reference signal resource.

3. The method according to claim 2, wherein the designated resource comprises at least one of:

a PDCCH, a physical downlink shared channel (PDSCH), a physical uplink shared channel (PUSCH), a physical uplink control channel (PUCCH), a physical random access channel (PRACH), a physical broadcast channel (PBCH), a channel state information reference signal (CSI-RS), a sounding reference signal (SRS), a positioning reference signal (PRS), a tracking reference signal (TRS), or a synchronization signal block (SSB).

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

determining the designated resource according to at least one of:

a control resource set identifier;

a control resource set pool identifier;

an identifier of a semi-persistent PDSCH;

an identifier of a resource corresponding to a PUCCH;

an identifier of a configured grant free PUSCH;

a PRACH resource identifier;

an SSB index;

a reference signal resource identifier; or,

a reference signal resource set identifier.

5. The method according to any one of claims 1-4, wherein determining the application time of the beam corresponding to the designated resource according to the sending time point of the indication information comprises:

determining the application time of the beam corresponding to the designated resource according to the sending time point of the indication information and a designated time gap.

6. The method according to claim 5, wherein the DCI is further configured to indicate first resource information of at least one of a PDSCH or a PUSCH on the second carrier, and second resource information of a PUCCH for sending the indication information, the method further comprising:

determining the designated time gap according to at least one of: the first resource information, the second resource information, or third resource information of a PDCCH on the first carrier.

7. The method according to claim 6, wherein determining the designated time gap further comprises:

determining the designated time gap according to at least one of a sub-carrier spacing (SCS) in the first resource information or an SCS in the second resource information.

8. The method according to claim 7, wherein determining the designated time gap according to at least one of the sub-carrier spacing (SCS) in the first resource information or the SCS in the second resource information comprises at least one of:

determining the designated time gap according to the SCS in the first resource information, wherein an SCS in the third resource information is greater than or equal to the SCS in the first resource information;

determining the designated time gap according to the SCS in the second resource information, wherein the SCS in the third resource information is greater than or equal to the SCS in the first resource information;

determining the designated time gap according to the SCS in the first resource information, wherein the SCS in the third resource information is greater than or equal to the SCS in the second resource information; or

determining the designated time gap according to the SCS in the second resource information, wherein the SCS in the third resource information is greater than or equal to the SCS in the second resource information.

9. The method according to any one of claims 6 to 8, wherein determining the designated time gap further comprises:

determining a first sub time in the designated time gap according to at least one of an SCS in the first resource information or an SCS in the second resource information.

10. The method according to claim 9, wherein determining the first sub time in the designated time gap according to at least one of the SCS in the first resource information or the SCS in the second resource information comprises at least one of:

determining the first sub time in the designated time gap according to the SCS in the first resource information, wherein an SCS in the third resource information is less than the SCS in the first resource information;

and/or

determining the first sub time in the designated time gap according to the SCS in the second resource information, wherein the SCS in the third resource information is less than the SCS in the first resource information;

and/or

determining the first sub time in the designated time gap according to the SCS in the first resource information, wherein the SCS in the third resource information is less than the SCS in the second resource information; or

determining the first sub time in the designated time gap according to the SCS in the

second resource information, wherein the SCS in the third resource information is less than the SCS in the second resource information.

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

determining a second sub time in the designated time gap.

12. The method according to claim 11, wherein determining the second sub time in the designated time gap comprises at least one of:

determining the second sub time in the designated time gap according to at least one of the SCS in the first resource information or an SCS in the third resource information; or

determining the second sub time in the designated time gap according to at least one of the SCS in the second resource information or an SCS in the third resource information.

13. The method according to claim 12, wherein,

the second sub time is directly proportional to the SCS in the first resource information and inversely proportional to the SCS in the third resource information; or

the second sub time is directly proportional to the SCS in the second resource information and inversely proportional to the SCS in the third resource information; or

the second sub time is directly proportional to the SCS in the first resource information and the SCS in the second resource information, and inversely proportional to the SCS in the third resource information.

14. The method according to any one of claims 6 to 13, wherein determining the designated time gap further comprises:

determining the designated time gap according to at least one of the second resource information or third resource information of the PDCCH on the first carrier, wherein the DCI is further configured to indicate second resource information of a PUCCH for sending the indication information.

15. The method according to claim 14, wherein determining the designated time gap

according to at least one of the second resource information or the third resource information of the PDCCH on the first carrier comprises:

determining the designated time gap according to at least one of the SCS in the second resource information or the SCS in the third resource information, wherein the SCS in the third resource information is greater than or equal to the SCS in the second resource information; or

determining a first sub time in the designated time gap according to at least one of the SCS in the second resource information or the SCS in the third resource information, wherein the SCS in the third resource information is less than the SCS in the second resource information.

16. The method according to claim 15, further comprising:

determining a second sub time in the designated time gap according to the SCS in the second resource information and the SCS in the third resource information.

17. The method according to claim 16, wherein,

the second sub time is directly proportional to the SCS in the second resource information and inversely proportional to the SCS in the third resource information.

18. The method according to any one of claims 1-17, wherein,

the first carrier and the second carrier correspond to different serving cells of the terminal device respectively;

the first carrier corresponds to a serving cell of the terminal device, and the second carrier corresponds to a non-serving cell of the terminal device; or

the first carrier corresponds to a non-serving cell of the terminal device, and the second carrier corresponds to a serving cell of the terminal device.

19. A communication device, configured on a terminal device side, comprising:

a transceiver module, configured to receive downlink control information (DCI) based on a physical downlink control channel (PDCCH) of a first carrier, wherein the DCI is

configured to indicate a beam corresponding to a designated resource on a second carrier;

the transceiver module is configured to send indication information, wherein the indication information is configured to indicate a receiving state of the DCI; and

a processing module, configured to determine an application time of the beam corresponding to the designated resource according to a sending time point of the indication information.

20. A computer-readable storage medium having instructions stored thereon, wherein when the instructions are executed, the method according to any one of claims 1 to 18 is implemented.