WHAT IS CLAIMED IS:

1. A method for sending downlink data, comprising:

sending by a base station downlink schedule information to a terminal, wherein the downlink schedule information is configured to inform the terminal of configuration information used to send downlink data through n antenna panels of the base station and comprises a hybrid automatic repeat request (HARQ) process number corresponding to the downlink data sent through each of the n antenna panels, where n is an integer greater than 1, wherein the n antenna panels are associated with n transmitter receiver points (TRPs) respectively; and

sending by the base station the downlink data to the terminal through the n antenna panels.~~——~~;

wherein the downlink data sent through the n antenna panels corresponds to a same HARQ entity and has a same HARQ process number, and downlink control information (DCI) sent by the base station through one antenna panel schedules a plurality of antenna panels.

2. The method of claim 1, wherein the downlink data is sent through an i^{th} antenna panel of the n antenna panels in one of the following way:

using identification information of the i^{th} antenna panel to scramble;

or

using a frequency domain resource or a code domain resource of a demodulation reference signal (DMRS) which is used for demodulating a PDSCH and corresponds to the i^{th} antenna panel to send;

where i is a positive integer less than or equal to n.

~~2. The method of claim 1, wherein, the downlink data sent through the n antenna panels corresponds to separate HARQ entities and HARQ processes, respectively.~~

~~3. The method of claim 1, wherein the downlink data sent through the n antenna panels corresponds to a same HARQ entity.~~

~~4. The method of claim 3, wherein the downlink data sent through the n antenna panels corresponds to different HARQ process numbers, respectively.~~

~~5. The method of claim 3, wherein the downlink data sent through at least two~~

antenna panels of the n antenna panels corresponds to a same HARQ process number.

6. The method of any of claims 1-5, wherein sending by the base station the downlink schedule information to the terminal comprises:

sending by the base station n DCIs to the terminal through the n antenna panels;

wherein the DCI sent through an i^{th} antenna panel of the n antenna panels is configured to inform the terminal of the configuration information used to send the downlink data through the i^{th} antenna panel, and the DCI sent through the i^{th} antenna panel comprises the HARQ process number corresponding to the downlink data sent through the i^{th} antenna panel, where i is a positive integer less than or equal to n.

7. The method of claim 6, wherein the DCI is sent through the i^{th} antenna panel in the following way:

using identification information of the i^{th} antenna panel to scramble;

or

using a frequency domain resource or a code domain resource of a demodulation reference signal (DMRS) which is used for demodulating a physical downlink control channel (PDCCH) and corresponds to the i^{th} antenna panel to send;

or

carrying the identification information of the i^{th} antenna panel in the DCI sent through the i^{th} antenna panel;

or

using a control resource set (CORESET) corresponding to the i^{th} antenna panel to send, wherein PDCCHs of the n antenna panels use different CORESETs respectively.

8. The method of any of claims 1-5, wherein sending by the base station the downlink schedule information to the terminal comprises:

sending by the base station a target DCI to the terminal through at least one antenna panel;

wherein the target DCI comprises the downlink schedule information corresponding respectively to the n antenna panels, and the downlink schedule information corresponding to an i^{th} antenna panel of the n antenna panels comprises the HARQ process number corresponding to the downlink data sent through the i^{th} antenna panel and/or identification

~~information of the ith antenna panel, where i is a positive integer less than or equal to n.~~

~~9. The method of claim 8, wherein,~~

~~the downlink data sent through the ith antenna panel comprises one transport block (TB);~~

~~or~~

~~the downlink data sent through the ith antenna panel comprises a plurality of TBs and the plurality of TBs correspond to one HARQ process number in one HARQ entity.~~

~~10. The method of any of claims 1-5, wherein the downlink data is sent through an ith antenna panel of the n antenna panels in the following way:~~

~~using identification information of the ith antenna panel to scramble;~~

~~or~~

~~using a frequency domain resource or a code domain resource of a DMRS which is used for demodulating a PDSCH and corresponds to the ith antenna panel to send;~~

~~where i is a positive integer less than or equal to n.~~

~~11~~3. A method for receiving downlink data, comprising:

receiving by a terminal downlink schedule information sent by a base station, wherein the downlink schedule information is configured to inform the terminal of configuration information used to send downlink data through n antenna panels of the base station and comprises a hybrid automatic repeat request (HARQ) process number corresponding to the downlink data sent through each of the n antenna panels, where n is an integer greater than 1, wherein the n antenna panels are associated with n transmitter receiver points (TRPs) respectively; and

receiving by the terminal the downlink data based on the downlink schedule information~~.~~;

wherein the downlink data received by the terminal and sent by the base station through the n antenna panels corresponds to a same HARQ entity and has a same HARQ process number, and downlink control information (DCI) received by the terminal and sent by the base station through one antenna panel is configured to schedule a plurality of antenna panels.

~~12. The method of claim 11, wherein receiving by the terminal the downlink~~

~~schedule information sent by the base station comprises:~~

~~receiving by the terminal n DCIs sent by the base station through the n antenna panels;~~

~~wherein the DCI sent through an i^{th} antenna panel of the n antenna panels is configured to inform the terminal of the configuration information used to send the downlink data through the i^{th} antenna panel, and the DCI sent through the i^{th} antenna panel comprises the HARQ process number corresponding to the downlink data sent through the i^{th} antenna panel, where i is a positive integer less than or equal to n.~~

~~13. The method of claim 11, wherein receiving by the terminal the downlink schedule information sent by the base station comprises:~~

~~receiving by the terminal a target DCI sent by the base station through at least one antenna panel;~~

~~wherein the target DCI comprises the downlink schedule information corresponding respectively to the n antenna panels, and the downlink schedule information corresponding to an i^{th} antenna panel of the n antenna panels comprises the HARQ process number corresponding to the downlink data sent through the i^{th} antenna panel and/or identification information of the i^{th} antenna panel, where i is a positive integer less than or equal to n.~~

~~14~~4. An apparatus for sending downlink data, applicable in a base station, comprising:

an information sending module, configured to send downlink schedule information to a terminal, wherein the downlink schedule information is configured to inform the terminal of configuration information used to send downlink data through n antenna panels of the base station and comprises a hybrid automatic repeat request (HARQ) process number corresponding to the downlink data sent through each of the n antenna panels, where n is an integer greater than 1~~; and~~, wherein the n antenna panels are associated with n transmitter receiver points (TRPs) respectively; and

a data sending module, configured to send the downlink data to the terminal through the n antenna panels~~.~~;

wherein the downlink data sent through the n antenna panels corresponds to a same HARQ entity and has a same HARQ process number, and downlink control information

(DCI) sent by the base station through one antenna panel schedules a plurality of antenna panels.

~~15. The apparatus of claim 14, wherein the information sending module is configured to send n DCIs to the terminal through the n antenna panels;~~

~~wherein the DCI sent through an i^{th} antenna panel of the n antenna panels is configured to inform the terminal of the configuration information used to send the downlink data through the i^{th} antenna panel, and the DCI sent through the i^{th} antenna panel comprises the HARQ process number corresponding to the downlink data sent through the i^{th} antenna panel, where i is a positive integer less than or equal to n.~~

~~16. The apparatus of claim 14, wherein the information sending module is configured to send a target DCI to the terminal through at least one antenna panel;~~

~~wherein the target DCI comprises the downlink schedule information corresponding respectively to the n antenna panels, and the downlink schedule information corresponding to an i^{th} antenna panel of the n antenna panels comprises the HARQ process number corresponding to the downlink data sent through the i^{th} antenna panel and/or identification information of the i^{th} antenna panel, where i is a positive integer less than or equal to n.~~

~~17~~5. An apparatus for receiving downlink data, applicable in a terminal, comprising:

an information receiving module, configured to receive downlink schedule information sent by a base station, wherein the downlink schedule information is configured to inform the terminal of configuration information used to send downlink data through n antenna panels of the base station and comprises a hybrid automatic repeat request (HARQ) process number corresponding to the downlink data sent through each of the n antenna panels, where n is an integer greater than 1~~; and~~, wherein the n antenna panels are associated with n transmitter receiver points (TRPs) respectively; and

a data receiving module, configured to receive the downlink data based on the downlink schedule information~~.~~;

wherein the downlink data sent through the n antenna panels corresponds to a same HARQ entity and has a same HARQ process number, and downlink control information

(DCI) sent by the base station through one antenna panel schedules a plurality of antenna panels.

~~18. The apparatus of claim 17, wherein the information receiving module is configured to receive n DCIs sent by the base station through the n antenna panels;~~

~~wherein the DCI sent through an i^{th} antenna panel of the n antenna panels is configured to inform the terminal of the configuration information used by the i^{th} antenna panel to send the downlink data, and the DCI sent through the i^{th} antenna panel comprises the HARQ process number corresponding to the downlink data sent through the i^{th} antenna panel, where i is a positive integer less than or equal to n.~~

~~19. The apparatus of claim 17, wherein the information receiving module is configured to receive a target DCI sent by the base station through at least one antenna panel;~~

~~wherein the target DCI comprises the downlink schedule information corresponding respectively to the n antenna panels, and the downlink schedule information corresponding to an i^{th} antenna panel of the n antenna panels comprises the HARQ process number corresponding to the downlink data sent through the i^{th} antenna panel and/or identification information of the i^{th} antenna panel, where i is a positive integer less than or equal to n.~~

~~20~~6. An apparatus for sending downlink data, applicable in a base station, comprising:

a processor; and

a memory configured to store instructions executable by the processor;

wherein the processor is configured to perform:

~~send~~sending downlink schedule information to a terminal, wherein the downlink schedule information is configured to inform the terminal of configuration information used to send downlink data through n antenna panels of the base station and comprises a hybrid automatic repeat request (HARQ) process number corresponding to the downlink data sent through each of the n antenna panels, where n is an integer greater than 1, wherein the n antenna panels are associated with n transmitter receiver points (TRPs) respectively; and

~~send~~sending the downlink data to the terminal through the n antenna panels~~.~~;

wherein the downlink data sent through the n antenna panels corresponds to a same HARQ entity and has a same HARQ process number, and downlink control information (DCI) sent by the base station through one antenna panel schedules a plurality of antenna panels.

~~21~~7. An apparatus for receiving downlink data, applicable in a terminal, comprising:

a processor; and

a memory configured to store instructions executable by the processor;

wherein the processor is configured to perform:

~~receive~~receiving downlink schedule information sent by a base station, wherein the downlink schedule information is configured to inform the terminal of configuration information used to send downlink data through n antenna panels of the base station and comprises a hybrid automatic repeat request (HARQ) process number corresponding to the downlink data sent through each of the n antenna panels, where n is an integer greater than 1, wherein the n antenna panels are associated with n transmitter receiver points (TRPs) respectively; and~~—~~

~~receive~~receiving the downlink data based on the downlink schedule information~~.~~;

wherein the downlink data sent through the n antenna panels corresponds to a same HARQ entity and has a same HARQ process number, and downlink control information (DCI) sent by the base station through one antenna panel schedules a plurality of antenna panels.

~~22~~8. A non-transitory computer-readable storage medium, having computer programs stored thereon, wherein when the computer programs are executed by a processor, steps of the method for sending downlink data according to any of claims 1-~~10 or steps of the method for receiving downlink data according to any of claims 11-13 are implemented~~2.

9. A non-transitory computer-readable storage medium, having computer programs stored thereon, wherein when the computer programs are executed by a processor, steps of the method for receiving downlink data according to claim 3 are implemented.