

CLAIMS

What is claimed is:

1. A method for transmitting uplink control information, applied to a terminal and comprising:

5 obtaining a target parameter of each type of uplink control information in at least one type of uplink control information based on a type of a configured grant physical uplink shared channel (PUSCH), wherein the target parameter is used for determining the number of resource elements (REs) to be occupied by the uplink control information in the configured grant PUSCH;

10 determining positions of REs to be occupied by each type of uplink control information in the at least one type of uplink control information; and

based on the number of REs and the positions of REs, sending the at least one type of uplink control information through the configured grant PUSCH; wherein

15 the at least one type of uplink control information comprises first control information;

wherein the first control information is configured grant uplink control information;

20 wherein the obtaining a target parameter of each type of uplink control information in at least one type of uplink control information based on a type of a configured grant physical uplink shared channel (PUSCH) comprises:

in a case that the configured grant PUSCH is type 1, obtaining identification information corresponding to each type of uplink control information in the at least one type of uplink control information and configured by using radio resource control (RRC); and

25 based on the identification information, determining a target parameter corresponding to the identification information of each type of uplink control information in the at least one type of uplink control information.

30 2. The method for transmitting uplink control information according to claim 1, wherein the at least one type of uplink control information further comprises second control information; and

the second control information comprises at least one of hybrid automatic repeat request acknowledgement (HARQ-ACK) and channel state information (CSI).

3. The method for transmitting uplink control information according to claim 1, wherein the obtaining a target parameter of each type of uplink control information in at least one type of uplink control information based on a type of a configured grant physical uplink shared channel (PUSCH) comprises:

5 in a case that the configured grant PUSCH is type 2, if a configuration manner for a parameter indicated by radio resource control (RRC) is a semi-static manner, obtaining identification information corresponding to each type of uplink control information in the at least one type of uplink control information and configured by using RRC; or if a configuration manner for a parameter indicated by radio resource
10 control (RRC) is a dynamic manner, obtaining indication information in a parameter indicator field comprised in downlink control information (DCI), and determining, based on the indication information, identification information corresponding to each type of uplink control information in the at least one type of uplink control information; and

15 based on the identification information, determining a target parameter corresponding to the identification information of each type of uplink control information in the at least one type of uplink control information.

4. The method for transmitting uplink control information according to claim 1, wherein the determining positions of REs to be occupied by each type of uplink
20 control information in the at least one type of uplink control information comprises:

 mapping each type of uplink control information in the at least one type of uplink control information on the configured grant PUSCH by using a frequency-first mapping rule; and

 determining, based on a mapping relationship, the positions of REs to be
25 occupied by each type of uplink control information in the at least one type of uplink control information.

5. The method for transmitting uplink control information according to claim 4, wherein the mapping each type of uplink control information in the at least one type of uplink control information on the configured grant PUSCH comprises:

30 mapping the first control information starting from the first non-DMRS OFDM symbol after the first demodulation reference signal (DMRS) orthogonal frequency division multiplexing (OFDM) symbol for transmission of the configured grant PUSCH; or

 mapping the first control information starting from the first non-DMRS OFDM

symbol for transmission of the configured grant PUSCH.

6. The method for transmitting uplink control information according to claim 4, wherein the at least one type of uplink control information further comprises second control information, and the second control information comprises hybrid automatic repeat request acknowledgement (HARQ-ACK); and the mapping each type of uplink control information in the at least one type of uplink control information on the configured grant PUSCH comprises:

mapping the first control information and the HARQ-ACK starting from the first non-DMRS OFDM symbol after the first demodulation reference signal (DMRS) orthogonal frequency division multiplexing (OFDM) symbol for transmission of the configured grant PUSCH; or

mapping the first control information starting from the first non-DMRS OFDM symbol for transmission of the configured grant PUSCH, and mapping the HARQ-ACK starting from the first non-DMRS OFDM symbol after the first DMRS OFDM symbol for transmission of the configured grant PUSCH; wherein

the first control information and the HARQ-ACK are mapped to different REs.

7. The method for transmitting uplink control information according to claim 6, wherein in a case that the second control information further comprises channel state information (CSI), the mapping each type of uplink control information in the at least one type of uplink control information on the configured grant PUSCH further comprises:

mapping the CSI starting from the first non-DMRS OFDM symbol for the configured grant PUSCH, wherein the CSI is mapped to REs other than REs occupied by the first control information and the HARQ-ACK.

8. The method for transmitting uplink control information according to claim 5, wherein the at least one type of uplink control information further comprises second control information, and the second control information comprises channel state information (CSI); and the mapping each type of uplink control information in the at least one type of uplink control information on the configured grant PUSCH further comprises:

mapping the CSI starting from the first non-DMRS OFDM symbol for the configured grant PUSCH, wherein the CSI is mapped to REs other than REs occupied by the first control information.

9. A terminal, 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, following steps are implemented:

obtaining a target parameter of each type of uplink control information in at least one type of uplink control information based on a type of a configured grant physical uplink shared channel (PUSCH), wherein the target parameter is used for determining the number of resource elements (REs) to be occupied by the uplink control information in the configured grant PUSCH;

determining positions of REs to be occupied by each type of uplink control information in the at least one type of uplink control information; and

based on the number of REs and the positions of REs, sending the at least one type of uplink control information through the configured grant PUSCH; wherein

the at least one type of uplink control information comprises first control information;

wherein the first control information is configured grant uplink control information;

wherein the obtaining a target parameter of each type of uplink control information in at least one type of uplink control information based on a type of a configured grant physical uplink shared channel (PUSCH) comprises:

in a case that the configured grant PUSCH is type 1, obtaining identification information corresponding to each type of uplink control information in the at least one type of uplink control information and configured by using radio resource control (RRC); and

based on the identification information, determining a target parameter corresponding to the identification information of each type of uplink control information in the at least one type of uplink control information.

10. The terminal according to claim 9, wherein the at least one type of uplink control information further comprises second control information; and

the second control information comprises at least one of hybrid automatic repeat request acknowledgement (HARQ-ACK) and channel state information (CSI).

11. The terminal according to claim 9, wherein the obtaining a target parameter of each type of uplink control information in at least one type of uplink control information based on a type of a configured grant physical uplink shared channel (PUSCH) comprises:

in a case that the configured grant PUSCH is type 2, if a configuration manner

for a parameter indicated by radio resource control (RRC) is a semi-static manner, obtaining identification information corresponding to each type of uplink control information in the at least one type of uplink control information and configured by using RRC; or if a configuration manner for a parameter indicated by radio resource control (RRC) is a dynamic manner, obtaining indication information in a parameter indicator field comprised in downlink control information (DCI), and determining, based on the indication information, identification information corresponding to each type of uplink control information in the at least one type of uplink control information; and

based on the identification information, determining a target parameter corresponding to the identification information of each type of uplink control information in the at least one type of uplink control information.

12. The terminal according to claim 9, wherein the determining positions of REs to be occupied by each type of uplink control information in the at least one type of uplink control information comprises:

mapping each type of uplink control information in the at least one type of uplink control information on the configured grant PUSCH by using a frequency-first mapping rule; and

determining, based on a mapping relationship, the positions of REs to be occupied by each type of uplink control information in the at least one type of uplink control information.

13. The terminal according to claim 12, wherein the mapping each type of uplink control information in the at least one type of uplink control information on the configured grant PUSCH comprises:

mapping the first control information starting from the first non-DMRS OFDM symbol after the first demodulation reference signal (DMRS) orthogonal frequency division multiplexing (OFDM) symbol for transmission of the configured grant PUSCH; or

mapping the first control information starting from the first non-DMRS OFDM symbol for transmission of the configured grant PUSCH.

14. The terminal according to claim 12, wherein the at least one type of uplink control information further comprises second control information, and the second control information comprises hybrid automatic repeat request acknowledgement (HARQ-ACK); and the mapping each type of uplink control information in the at

least one type of uplink control information on the configured grant PUSCH comprises:

mapping the first control information and the HARQ-ACK starting from the first non-DMRS OFDM symbol after the first demodulation reference signal (DMRS) orthogonal frequency division multiplexing (OFDM) symbol for transmission of the configured grant PUSCH; or

mapping the first control information starting from the first non-DMRS OFDM symbol for transmission of the configured grant PUSCH, and mapping the HARQ-ACK starting from the first non-DMRS OFDM symbol after the first DMRS OFDM symbol for transmission of the configured grant PUSCH; wherein

the first control information and the HARQ-ACK are mapped to different REs.

15. The terminal according to claim 13, wherein the at least one type of uplink control information further comprises second control information, and the second control information comprises channel state information (CSI); and the mapping each type of uplink control information in the at least one type of uplink control information on the configured grant PUSCH further comprises:

mapping the CSI starting from the first non-DMRS OFDM symbol for the configured grant PUSCH, wherein the CSI is mapped to REs other than REs occupied by the first control information.

16. A network-side 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, following steps are implemented:

determining a target parameter of each type of uplink control information in at least one type of uplink control information based on a type of a configured grant physical uplink shared channel (PUSCH), wherein the target parameter is used for determining the number of resource elements (REs) to be occupied by the uplink control information in the configured grant PUSCH;

determining positions of REs to be occupied by each type of uplink control information in the at least one type of uplink control information; and

based on the number of REs and the positions of REs, receiving the at least one type of uplink control information on the configured grant PUSCH; wherein

the at least one type of uplink control information comprises first control information;

wherein the first control information is configured grant uplink control information;

5 before the determining a target parameter of each type of uplink control information in at least one type of uplink control information based on a type of a configured grant physical uplink shared channel (PUSCH), following steps are implemented:

10 in a case that the configured grant PUSCH is type 1, configuring, for a terminal by using radio resource control (RRC) identification information corresponding to each type of uplink control information in the at least one type of uplink control information; wherein

the identification information is used to assist the terminal in obtaining the target parameter of each type of uplink control information in the at least one type of uplink control information.