

WHAT IS CLAIMED IS:

1. A method for hybrid automatic repeat request (HARQ) feedback, performed by a base station, comprising:

returning a second random access message Msg.B to at least one terminal after receiving a first random access message Msg.A sent by each of the at least one terminal, wherein the Msg.B is configured to indicate a HARQ feedback resource of each HARQ feedback terminal in the at least one terminal, and the HARQ feedback resources of respective HARQ feedback terminals are different; and

receiving a HARQ feedback sent by each HARQ feedback terminal for the Msg.B on the HARQ feedback resource of each HARQ feedback terminal, wherein,

the Msg.B comprises physical uplink control channel (PUCCH) parameters of respective HARQ feedback terminals to the at least one terminal,

the PUCCH parameters comprise a time parameter k and a PUCCH resource indicator Δ_{PRI} ; the time parameter k is configured to calculate a time point of sending the HARQ feedback, and the PUCCH resource indicator Δ_{PRI} is configured to calculate a serial number of PUCCH resource for sending the HARQ feedback in a PUCCH resource set, and the PUCCH resource set is a candidate PUCCH resource set configured by a high signaling.

2. The method according to claim 1, wherein returning the Msg.B to the at least one terminal, comprises:

returning the Msg.B comprising PUCCH parameters of respective HARQ feedback terminals to the at least one terminal

.3. The method according to claim 2, wherein

the PUCCH parameters of respective HARQ feedback terminals comprise the time parameter k of each HARQ feedback terminal, and the PUCCH resource indicator Δ_{PRI} of each HARQ feedback terminal.

4. The method according to claim 2, wherein when the PUCCH parameters of respective HARQ feedback terminals comprise the common time parameter k shared by the HARQ feedback terminals, and the PUCCH resource indicator Δ_{PRI} of each HARQ

feedback terminal,

the common time parameter k shared by the HARQ feedback terminals is carried in a physical downlink control channel (PDCCH) of the Msg.B; and

the PUCCH resource indicator Δ_{PRI} of each HARQ feedback terminal is carried in proprietary information of each HARQ feedback terminal, and the proprietary information of each HARQ feedback terminal is carried in a physical downlink shared channel (PDSCH) of the Msg.B.

5. The method according to claim 2, wherein when the PUCCH parameters of respective HARQ feedback terminals comprise the time parameter k of each HARQ feedback terminal, and the common PUCCH resource indicator Δ_{PRI} shared by the HARQ feedback terminals,

the common PUCCH resource indicator Δ_{PRI} shared by the HARQ feedback terminals is carried in a PDCCH of the Msg.B; and

the time parameter k of each HARQ feedback terminal is carried in proprietary information of each HARQ feedback terminal, and the proprietary information of each HARQ feedback terminal is carried in a PDSCH of the Msg.B.

6. The method according to claim 3, wherein

the time parameter k of each HARQ feedback terminal and the PUCCH resource indicator Δ_{PRI} of each HARQ feedback terminal are carried in proprietary information of each HARQ feedback terminal, wherein the proprietary information of each HARQ feedback terminal is carried in a PDSCH of the Msg.B.

7. The method according to claim 1, before receiving the HARQ feedback sent by each HARQ feedback terminal for the Msg.B on the HARQ feedback resource of each HARQ feedback terminal, comprising:

obtaining PUCCH resource offset information of each HARQ feedback terminal based on offset configuration information, wherein the PUCCH resource offset information is configured to indicate an offset of the PUCCH resource for sending the HARQ feedback relative to a reference PUCCH resource, the reference PUCCH resource is a PUCCH resource calculated based on the PUCCH resource indicator Δ_{PRI} ; and

determining the HARQ feedback resource of each HARQ feedback terminal based on the PUCCH resource offset information of each HARQ feedback terminal.

8. The method according to claim 7, wherein the offset configuration information comprises PUCCH resource offset information of each random access preamble sequence, and obtaining the PUCCH resource offset information of each HARQ feedback terminal based on the offset configuration information comprises:

obtaining the PUCCH resource offset information of each HARQ feedback terminal by querying the offset configuration information based on a preamble sequence included in the Msg.A sent by each HARQ feedback terminal.

9. The method according to claim 7, wherein the Msg.B comprises respective proprietary information of the at least one terminal, and the offset configuration information comprises the PUCCH resource offset information corresponding to a location where the proprietary information is in the Msg.B; and

obtaining the PUCCH resource offset information of each HARQ feedback terminal based on the offset configuration information comprises:

obtaining the PUCCH resource offset information of each HARQ feedback terminal by querying the offset configuration information based on a location of the proprietary information of each HARQ feedback terminal in the Msg.B.

10. The method according to any one of claims 1 to 9, wherein the Msg.A comprises a random access preamble sequence and a PUSCH; and

the HARQ feedback terminal is a terminal for which the base station detects a corresponding preamble sequence and successfully parses out a content in the PUSCH.

11. The method according to claim 1, wherein the at least one terminal further comprises respective retransmission terminals, and the retransmission terminal is a terminal for which the base station detects a corresponding preamble sequence and fails to parse out content in a corresponding PUSCH, the Msg.B is further configured to indicate a retransmission resource of each retransmission terminal, and the method further comprises:

receiving the PUSCH in the Msg.A of each retransmission terminal that is

retransmitted by each retransmission terminal on the retransmission resource of each retransmission terminal.

12. A method for HARQ feedback, performed by a target terminal, comprising:

sending a first random access message Msg.A to a base station;

receiving a second random access message Msg.B returned by the base station, wherein the Msg.B is configured to indicate a HARQ feedback resource of each HARQ feedback terminal in at least one terminal, and the HARQ feedback resources of respective HARQ feedback terminals are different; and

sending a HARQ feedback to the base station in response to that the target terminal is any one of the respective HARQ feedback terminals, wherein,

the Msg.B comprises PUCCH parameters of respective HARQ feedback terminals,

the PUCCH parameters comprise a time parameter k and a PUCCH resource indicator Δ_{PRI} ; the time parameter k is configured to calculate a time point of sending the HARQ feedback, and the PUCCH resource indicator Δ_{PRI} is configured to calculate a serial number of PUCCH resource for sending the HARQ feedback in a PUCCH resource set, and the PUCCH resource set is a candidate PUCCH resource set configured by a high signaling.

13. The method according to claim 12, wherein

the PUCCH parameters of respective HARQ feedback terminals comprise the time parameter k of each HARQ feedback terminal, and the PUCCH resource indicator Δ_{PRI} of each HARQ feedback terminal.

14. The method according to claim 12, wherein when the PUCCH parameters of respective HARQ feedback terminals comprise the common time parameter k shared by the HARQ feedback terminals, and the PUCCH resource indicator Δ_{PRI} of each HARQ feedback terminal,

the common time parameter k shared by the HARQ feedback terminals is carried in a physical downlink control channel (PDCCH) of the Msg.B; and

the PUCCH resource indicator Δ_{PRI} of each HARQ feedback terminal is carried in proprietary information of each HARQ feedback terminal, and the proprietary information of each HARQ feedback terminal is carried in a physical downlink shared

channel (PDSCH) of the Msg.B.

15. The method according to claim 12, wherein when the PUCCH parameters of respective HARQ feedback terminals comprise the time parameter k of each HARQ feedback terminal, and the common PUCCH resource indicator Δ_{PRI} shared by the HARQ feedback terminals,

the common PUCCH resource indicator Δ_{PRI} shared by the HARQ feedback terminals is carried in a PDCCH of the Msg.B; and

the time parameter k of each HARQ feedback terminal is carried in proprietary information of each HARQ feedback terminal, and the proprietary information of each HARQ feedback terminal is carried in a PDSCH of the Msg.B.

16. The method according to claim 13, wherein

the time parameter k of each HARQ feedback terminal and the PUCCH resource indicator Δ_{PRI} of each HARQ feedback terminal are carried in the proprietary information of each HARQ feedback terminal, wherein the proprietary information of each HARQ feedback terminal is carried in the PDSCH of the Msg.B.

17. The method according to claim 12, before sending the HARQ feedback to the base station on the HARQ feedback resource of the target terminal, further comprising:

obtaining PUCCH resource offset information of the target terminal based on offset configuration information, wherein the PUCCH resource offset information is configured to indicate an offset of the PUCCH resource for sending the HARQ feedback relative to a reference PUCCH resource, and the reference PUCCH resource is a PUCCH resource calculated based on the PUCCH resource indicator Δ_{PRI} ; and

determining the HARQ feedback resource of the target terminal based on the PUCCH resource offset information of the target terminal.

18. The method according to claim 17, wherein the offset configuration information comprises the PUCCH resource offset information of each random access preamble sequence; and

obtaining the PUCCH resource offset information of the target terminal based on the offset configuration information comprises:

obtaining the PUCCH resource offset information of the target terminal by querying the offset configuration information based on the preamble sequence in the Msg.A sent by the target terminal.

19. The method according to claim 17, wherein the Msg.B comprises proprietary information of each of the at least one terminal, and the offset configuration information comprises the PUCCH resource offset information corresponding to a location of the proprietary information in the Msg.B; and

obtaining the PUCCH resource offset information of the target terminal based on the offset configuration information, comprises:

obtaining the PUCCH resource offset information of the target terminal by querying the offset configuration information based on the location of the proprietary information of the target terminal in the Msg. B.

20. The method according to any one of claims 12 to 19, wherein the Msg.A comprises a random access preamble sequence and a PUSCH; and

the HARQ feedback terminal is a terminal for which the base station detects the corresponding preamble sequence and successfully parses out content in the PUSCH.

21. The method according to claim 12, wherein the Msg.B is further configured to indicate a retransmission resource of each retransmission terminal in the at least one terminal, and each retransmission terminal is a terminal for which the base station detects the corresponding preamble sequence and fails to parse out content in the PUSCH, and the method further comprises:

retransmitting the PUSCH in the Msg.A on the retransmission resource of the target terminal in response to that the target terminal is any of respective retransmission terminals.

22. An apparatus for HARQ feedback, applied to a base station, comprising:

a processor;

a memory configured to store instructions executable by the processor; wherein, the processor is configured to:

return a second random access message Msg.B to at least one terminal after receiving

a first random access message Msg.A sent by each of the at least one terminal, wherein the Msg.B is configured to indicate a HARQ feedback resource of each HARQ feedback terminal in the at least one terminal, and the HARQ feedback resources of respective HARQ feedback terminals are different; and

receive a HARQ feedback sent by each HARQ feedback terminal for the Msg.B on the HARQ feedback resource of each HARQ feedback terminal, wherein,

the Msg.B comprises physical uplink control channel (PUCCH) parameters of respective HARQ feedback terminals to the at least one terminal,

the PUCCH parameters comprise a time parameter k and a PUCCH resource indicator Δ_{PRI} ; the time parameter k is configured to calculate a time point of sending the HARQ feedback, and the PUCCH resource indicator Δ_{PRI} is configured to calculate a serial number of PUCCH resource for sending the HARQ feedback in a PUCCH resource set, and the PUCCH resource set is a candidate PUCCH resource set configured by a high signaling.

23. An apparatus for HARQ feedback, applied to a target terminal, comprising:

a processor;

a memory configured to store instructions executable by the processor; wherein, the processor is configured to:

send a first random access message Msg.A to a base station;

receive a second random access message Msg.B returned by the base station, wherein the Msg.B is configured to indicate a HARQ feedback resource of each HARQ feedback terminal in at least one terminal, and the HARQ feedback resources of respective HARQ feedback terminals are different; and

send a HARQ feedback to the base station in response to that the target terminal is any one of the respective HARQ feedback terminals, wherein,

the Msg.B comprises physical uplink control channel (PUCCH) parameters of respective HARQ feedback terminals to the at least one terminal,

the PUCCH parameters comprise a time parameter k and a PUCCH resource indicator Δ_{PRI} ; the time parameter k is configured to calculate a time point of sending the HARQ

feedback, and the PUCCH resource indicator Δ_{PRI} is configured to calculate a serial number of PUCCH resource for sending the HARQ feedback in a PUCCH resource set, and the PUCCH resource set is a candidate PUCCH resource set configured by a high signaling.

24. A computer-readable storage medium, wherein the computer-readable storage medium comprises executable instructions, and when a processor in a base station calls the executable instructions, the method for HARQ feedback according to any one of claims 1-11 is implemented.

25. A computer-readable storage medium, wherein the computer-readable storage medium comprises executable instructions, and when a processor in a terminal calls the executable instructions, the method for HARQ feedback according to any one of claims 12-21 is implemented.