

CLAIMS

1. An uplink transmission method, comprising:

receiving first indication information from a network device, wherein the first indication information indicates the terminal device to send a first transport block in a plurality of time units;

receiving second indication information from the network device, wherein the second indication information indicates the terminal device to send uplink control information UCI in a first time unit, and the first time unit is one of the plurality of time units;

determining based on a parameter G corresponding to the first time unit, a location that is in a circular buffer and that is of a starting bit in bit selection in a first coded bit sequence, wherein the first coded bit sequence is a coded bit sequence that is output through rate matching in a second time unit, the parameter G is a total quantity of coded bits available for transmission of the first transport block and the UCI in one time unit, G is a positive integer, and the second time unit is a next time unit of the first time unit in the plurality of time units; and

sending the UCI and the first transport block to the network device in the plurality of time units.

2. The method according to claim 1, wherein the sending the UCI and the first transport block to the network device in the plurality of time units comprises:

sending the UCI to the network device in the first time unit, and sending the UCI and the first transport block to the network device in the plurality of time units.

3. The method according to claim 1 or 2, wherein the method further comprises determining, based on at least one of the following parameters, the location that is in the circular buffer and that is of the starting bit in bit selection in the first coded bit sequence:

a starting bit index in bit selection in rate matching in the first time unit;

a circular buffer length; or

a quantity of filler bits in the circular buffer.

4. The method according to claim 1 or 3, wherein the method further comprises:

when the first UCI is sent to the network device in the first time unit, determining based on a quantity of filler bits skipped when bit selection is performed in the first time unit, a starting bit index for performing bit selection in the second time unit.

5. The method according to claims 1 to 4, wherein the method further comprises:

determining based on a parameter G' corresponding to the second time unit, a bit length for performing bit selection in the second time unit, wherein the parameter G' is a total quantity of coded bits available for transmission of only the first transport block in the second time unit.

6. The method according to claims 1 to 5, wherein that the first indication information indicates that the terminal device can send the first transport block in the plurality of time units comprises:

when the first indication information is received and a quantity of time units indicated by the first indication information is greater than 1, the first indication information indicates sending the first transport block in the plurality of time units.

7. The method according to claim 6, wherein a quantity of the plurality of time units is at least 1, 2, 4, or 8.

8. An uplink transmission method, comprising:

sending first indication information to a terminal device, wherein the first indication information indicates the terminal device to send a first transport block in a plurality of time units;

sending second indication information to the terminal device, wherein the second indication information indicates the terminal device to send uplink control information UCI in a first time unit, and the first time unit is one of the plurality of time units;

receiving the first transport block from the terminal device in the plurality of time units; and

determining based on a parameter G corresponding to the first time unit, a location that is in a circular buffer and that is of a starting bit in bit selection in a first coded bit sequence, wherein the first coded bit sequence is a coded bit sequence that is output through rate matching in a second time unit, the parameter G is a total quantity of coded bits available for transmission of the first transport block and the UCI in one time unit, G is a positive integer, and the second time unit is a next time unit of the first time unit in the plurality of time units.

9. The method according to claim 8, wherein method further comprises determining, based on at least one of the following parameters, the location that is in the circular buffer and that is of the starting bit in bit selection in the first coded bit sequence:

a starting bit index in bit selection in rate matching in the first time unit;

a circular buffer length; or

a quantity of filler bits in the circular buffer.

10. The method according to claim 8 or 9, wherein the method further comprises:

determining, by the network device based on a quantity of filler bits skipped when bit selection is performed in the first time unit, a starting bit index for performing bit selection in the second time unit.

11. The method according to any one of claims 8 to 10, wherein the method further comprises:

determining, by the network device based on a parameter G' corresponding to the second time unit, a bit length for performing bit selection in the second time unit, wherein the parameter G' is a total quantity of coded bits available for transmission of only the first transport block in the second

time unit.

12. The method according to any one of claims 8 to 11, wherein that the first indication information indicates that the terminal device can send the first transport block in the plurality of time units comprises:

when the terminal device receives the first indication information and a quantity of time units indicated by the first indication information is greater than 1, the first indication information that the terminal device can send the first transport block in the plurality of time units.

13. The method according to claim 12, wherein a quantity of the plurality of time units is at least 1, 2, 4, or 8.

14. An uplink transmission apparatus, comprising:

a transceiver module, configured to receive first indication information from a network device, wherein the first indication information indicates the uplink transmission apparatus to send a first transport block in a plurality of time units, wherein

the transceiver module is further configured to receive second indication information from the network device, wherein the second indication information indicates the uplink transmission apparatus to send uplink control information UCI in a first time unit, and the first time unit is one of the plurality of time units; and

a processing module, configured to determine, based on a parameter G corresponding to the first time unit, a location that is in a circular buffer and that is of a starting bit in bit selection in a first coded bit sequence, wherein the first coded bit sequence is a coded bit sequence that is output through rate matching in a second time unit, the parameter G is a total quantity of coded bits available for transmission of the first transport block and the UCI in one time unit, G is a positive integer, and the second time unit is a next time unit of the first time unit in the plurality of time units, wherein

the transceiver module is further configured to send the UCI and the first transport block to the network device in the plurality of time units.

15. The apparatus according to claim 14, wherein the transceiver module is configured to: send the first UCI to the network device in the first time unit, and send the UCI and the first transport block to the network device in the plurality of time units.

16. The apparatus according to claim 14 or 15, wherein the processing module is further configured to determine, based on at least one of the following parameters, the location that is in the circular buffer and that is of the starting bit in bit selection in the first coded bit sequence:

a starting bit index in bit selection in rate matching in the first time unit;

a circular buffer length; and

a quantity of filler bits in the circular buffer.

17. The apparatus according to claim 14 or 16, wherein:

the processing module is further configured to: when the transceiver module does not send the first UCI to the network device in the first time unit, determine, based on a quantity of filler bits skipped when bit selection is performed in the first time unit, a starting bit index for performing bit selection in the second time unit.

18. The apparatus according to any one of claims 14 to 17, wherein the method further comprises:

the processing module is further configured to determine, based on a parameter G' corresponding to the second time unit, a bit length for performing bit selection in the second time unit, wherein the parameter G' is a total quantity of coded bits available for transmission of only the first transport block in the second time unit.

19. The apparatus according to any one of claims 14 to 18, wherein that the first indication information indicates that the uplink transmission apparatus can send the first transport block in the plurality of time units comprises:

when the uplink transmission apparatus receives the first indication information and a quantity of time units indicated by the first indication information is greater than 1, the first indication information that the uplink transmission apparatus can send the first transport block in the plurality of time units.

20. The apparatus according to claim 19, wherein a quantity of the plurality of time units is at least 1, 2, 4, or 8.

21. An uplink transmission apparatus, comprising:

a transceiver module, configured to send first indication information to a terminal device, wherein the first indication information indicates the terminal device to send a first transport block in a plurality of time units, wherein

the transceiver module is further configured to send second indication information to the terminal device, wherein the second indication information indicates the terminal device to send uplink control information UCI in a first time unit, and the first time unit is one of the plurality of time units; and

the transceiver module is further configured to receive the first transport block from the terminal device in the plurality of time units; and

a processing module, configured to determine, based on a parameter G corresponding to the first time unit, a location that is in a circular buffer and that is of a starting bit in bit selection in a first coded bit sequence, wherein the first coded bit sequence is a coded bit sequence that is output through rate matching in a second time unit, the parameter G is a total quantity of coded bits available for transmission of the first transport block and the UCI in one time unit, G is a positive integer, and the

second time unit is a next time unit of the first time unit in the plurality of time units.

22. The apparatus according to claim 21, wherein the processing module is further configured to determine, based on at least one of the following parameters, the location that is in the circular buffer and that is of the starting bit in bit selection in the first coded bit sequence:

- a starting bit index in bit selection in rate matching in the first time unit;
- a circular buffer length; and
- a quantity of filler bits in the circular buffer.

23. The apparatus according to claim 21 or 22, wherein the method further comprises:

the processing module is further configured to determine, based on a quantity of filler bits skipped when bit selection is performed in the first time unit, a starting bit index for performing bit selection in the second time unit.

24. The apparatus according to any one of claims 21 to 23, wherein the method further comprises:

the processing module is further configured to determine, based on a parameter G' corresponding to the second time unit, a bit length for performing bit selection in the second time unit, wherein the parameter G' is a total quantity of coded bits available for transmission of only the first transport block in the second time unit.

25. The apparatus according to any one of claims 21 to 24, wherein that the first indication information indicates that the terminal device can send the first transport block in the plurality of time units comprises:

when the terminal device receives the first indication information and a quantity of time units indicated by the first indication information is greater than 1, the first indication information that the terminal device can send the first transport block in the plurality of time units.

26. The apparatus according to claim 25, wherein a quantity of the plurality of time units is at least 1, 2, 4, or 8.

27. A computer program product comprising instructions which, when executed by a computer, cause the computer to carry out the method of any one of claims 1 to 13.