

CLAIMS

What is claimed is:

1. A communication method, ~~performed by a terminal device or a module in a terminal device,~~
wherein the method comprises:

5 determining N opportunities, wherein the N opportunities are within a first time range, and N is a positive integer greater than or equal to 2; and

~~the first time range comprises M opportunity windows, an i^{th} opportunity window in the M opportunity windows comprises N_i opportunities in the N opportunities, N_i is a positive integer, M is a positive integer, and $i=1, 2, \dots, M$; and~~

10 performing data transmission within two or more of the N opportunities.

2. The method according to claim 1, wherein the method further comprises:
receiving first information, wherein the first information indicates a length of the first time range.

3. The method according to claim 1 ~~or 2~~, wherein
there is an unused opportunity in the N opportunities within the first time range in addition to the two or more of the N opportunities for data transmission.

~~$M < N$, the M opportunity windows comprise X opportunity windows, each of the X opportunity windows comprises the two or more of the N opportunities, and X is a positive integer less than or equal to M.~~

4. The method according to claim ~~3~~1, wherein
~~when X is equal to 1, an interval between any two adjacent opportunities in the N opportunities X opportunity windows is T1 time units, and T1 is 0 or a positive number; or~~

~~when X is greater than or equal to 2, an interval between any two adjacent opportunities in each of the X opportunity windows is T2 time units, and T2 is 0 or a positive number.~~

5. The method according to ~~any one of claims 1 to 4~~, wherein
each opportunity in the two or more of the N opportunities carry different TBs.

~~when M is greater than or equal to 2, an interval between any two adjacent opportunity windows in the M opportunity windows is T3 time units, and T3 is 0 or a positive number.~~

6. The method according to ~~any one of claims 1 to 5~~, wherein the method further comprises:
receiving second information, wherein the second information indicates the N opportunities;
and

the determining N opportunities comprises:

determining the N opportunities based on the second information.

7. The method according to ~~any one of claims 1 to 6~~, wherein

feedback information corresponding to two or more TBs transmitted within the two or more of the N opportunities is separately reported in different HARQ processes; or

feedback information corresponding to two or more TBs transmitted within the two or more of the N opportunities is reported in the same HARQ process.

~~the two or more of the N opportunities for data transmission are opportunities in one or more of the M opportunity windows.~~

~~8. The method according to claim 7, wherein the method further comprises:~~

~~performing retransmitted data transmission within opportunities in the one or more of the M opportunity windows, wherein an interval between an end location of a last time unit of an opportunity for data transmission and a start location of a first time unit of an opportunity for retransmitted data transmission is T4 time units, and T4 is a positive number.~~

~~98. A communication method, performed by a network device or a module in a network device, wherein the method comprises:~~

~~determining N opportunities, wherein the N opportunities are within a first time range, and N is a positive integer greater than or equal to 2; and~~

~~the first time range comprises M opportunity windows, an ith opportunity window in the M opportunity windows comprises Ni opportunities in the N opportunities, Ni is a positive integer, M is a positive integer, and i=1, 2, ..., M; and~~

~~performing data transmission within two or more of the N opportunities.~~

~~109. The method according to claim 98, wherein the method further comprises:~~

~~sending first information, wherein the first information indicates a length of the first time range.~~

~~110. The method according to claim 9 or 108, wherein~~

there is an unused opportunity in the N opportunities within the first time range in addition to the two or more of the N opportunities for data transmission.

~~M<N, the M opportunity windows comprise X opportunity windows, each of the X opportunity windows comprises the two or more of the N opportunities, and X is a positive integer less than or equal to M.~~

1211. The method according to claim ~~11~~8, wherein

~~when X is equal to 1, an interval between any two adjacent opportunities in the N opportunities X opportunity windows is T1 time units, and T1 is 0 or a positive number; or~~

~~when X is greater than or equal to 2, an interval between any two adjacent opportunities in each of the X opportunity windows is T2 time units, and T2 is 0 or a positive number.~~

1312. The method according to ~~any one of~~ claims ~~9 to 12~~8, wherein

each opportunity in the two or more of the N opportunities carry different TBs.

~~when M is greater than or equal to 2, an interval between any two adjacent opportunity windows in the M opportunity windows is T3 time units, and T3 is 0 or a positive number.~~

1314. The method according to ~~any one of~~ claims ~~8-9 to 13~~, wherein the method further comprises:

sending second information, wherein the second information indicates the N opportunities; and

the determining N opportunities comprises:

determining the N opportunities based on the second information.

1415. The method according to ~~any one of~~ claims ~~8-9 to 14~~, wherein

feedback information corresponding to two or more TBs transmitted within the two or more of the N opportunities is separately reported in different HARQ processes; or

feedback information corresponding to two or more TBs transmitted within the two or more of the N opportunities is reported in the same HARQ process.

~~the two or more of the N opportunities for data transmission are opportunities in one or more of the M opportunity windows.~~

15. A communication apparatus, comprising:

one or more processors; and

at least one memory, wherein the at least one memory stores instructions, and when executing the instructions stored in the memory, the one or more processors executes operations comprising:

determining N opportunities, wherein the N opportunities are within a first time range, and N is a positive integer greater than or equal to 2; and

performing data transmission within two or more of the N opportunities.

16. The communication apparatus according to claim 15, wherein the operations further

comprising:

receiving first information, wherein the first information indicates a length of the first time range.

5 17. The communication apparatus according to claim 15, wherein
there is an unused opportunity in the N opportunities within the first time range in addition to
the two or more of the N opportunities for data transmission.

10 18. The communication apparatus according to claim 15, wherein
an interval between any two adjacent opportunities in the N opportunities is T1 time units,
and T1 is 0 or a positive number.

15 19. The communication apparatus according to claim 15, wherein
each opportunity in the two or more of the N opportunities carry different TBs.

20 20. The communication apparatus according to claim 15, wherein the operations further
comprising:

receiving second information, wherein the second information indicates the N opportunities;
and

the determining N opportunities comprises:
determining the N opportunities based on the second information.

21. The communication apparatus according to claim 15, wherein
feedback information corresponding to two or more TBs transmitted within the two or more
of the N opportunities is separately reported in different HARQ processes; or

25 feedback information corresponding to two or more TBs transmitted within the two or more
of the N opportunities is reported in the same HARQ process.

30 22. A communication apparatus, comprising:
one or more processors; and
at least one memory, wherein the at least one memory stores instructions, and when executing
the instructions stored in the memory, the one or more processors executes operations comprising:
determining N opportunities, wherein the N opportunities are within a first time range, and N
is a positive integer greater than or equal to 2; and
performing data transmission within two or more of the N opportunities.

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23. The communication apparatus according to claim 22, wherein the operations further comprising:

sending first information, wherein the first information indicates a length of the first time range.

24. The communication apparatus according to claim 22, wherein there is an unused opportunity in the N opportunities within the first time range in addition to the two or more of the N opportunities for data transmission.

25. The communication apparatus according to claim 22, wherein an interval between any two adjacent opportunities in the N opportunities is T1 time units, and T1 is 0 or a positive number.

26. The communication apparatus according to claim 22, wherein each opportunity in the two or more of the N opportunities carry different TBs.

27. The communication apparatus according to claim 22, wherein the operations further comprising:

sending second information, wherein the second information indicates the N opportunities;

and

the determining N opportunities comprises:

determining the N opportunities based on the second information.

28. The communication apparatus according to claim 22, wherein feedback information corresponding to two or more TBs transmitted within the two or more of the N opportunities is separately reported in different HARQ processes; or

feedback information corresponding to two or more TBs transmitted within the two or more of the N opportunities is reported in the same HARQ process.

16. The method according to claim 15, wherein the method further comprises:

performing retransmitted data transmission within opportunities in the one or more of the M opportunity windows, wherein an interval between an end location of a last time unit of an opportunity for data transmission and a start location of a first time unit of an opportunity for retransmitted data transmission is T4 time units, and T4 is a positive number.

17. A communication method, performed by a terminal device or a module in a terminal

device, wherein the method comprises:

~~receiving third information, wherein the third information indicates a length of each of a plurality of time ranges, and at least two of the plurality of time ranges have different lengths; and performing data transmission within the plurality of time ranges.~~

18. The method according to claim 17, wherein

a correspondence exists between the length of each time range and data.

19. The method according to claim 18, wherein a length of an n th time range in the plurality of time ranges satisfies the following formula:

the length of the n th time range = $\text{fun}(T \times n) - \text{fun}[T \times (n - 1)]$, wherein

T is periodicity of the data, fun represents a rounding function, and n is a positive integer.

20. The method according to claim 17, wherein

the length of each of the plurality of time ranges comprises at least a length of first periodicity and an offset corresponding to each of the plurality of time ranges.

21. A communication method, performed by a network device or a module in a network device, wherein the method comprises:

~~sending third information, wherein the third information indicates a length of each of a plurality of time ranges, and at least two of the plurality of time ranges have different lengths; and performing data transmission within the plurality of time ranges.~~

22. The method according to claim 21, wherein a correspondence exists between the length of each time range and data.

23. The method according to claim 22, wherein a length of an n th time range in the plurality of time ranges satisfies the following formula:

the length of the n th time range = $\text{fun}(T \times n) - \text{fun}[T \times (n - 1)]$, wherein

T is periodicity of the data, fun represents a rounding function, and n is a positive integer.

24. The method according to claim 22, wherein

the length of each of the plurality of time ranges comprises at least a length of first periodicity and an offset corresponding to each of the plurality of time ranges.

25. A communication apparatus, wherein the apparatus comprises:

a processing module, configured to determine N opportunities, wherein the N opportunities are within a first time range, and N is a positive integer greater than or equal to 2; and

the first time range comprises M opportunity windows, an i th opportunity window in the M opportunity windows comprises N_i opportunities in the N opportunities, N_i is a positive integer, M is a positive integer, and $i=1, 2, \dots, M$; and

a transceiver module, configured to perform data transmission within two or more of the N opportunities.

26. The apparatus according to claim 25, wherein
the transceiver module is further configured to receive first information, wherein the first
information indicates a length of the first time range.

27. The apparatus according to claim 25 or 26, wherein
5 $M < N$, the M opportunity windows comprise X opportunity windows, each of the X
opportunity windows comprises two or more of the N opportunities, and X is a positive integer
less than or equal to M .

28. The apparatus according to claim 27, wherein
when X is equal to 1, an interval between any two adjacent opportunities in the X opportunity
10 windows is $T1$ time units, and $T1$ is 0 or a positive number; or
when X is greater than or equal to 2, an interval between any two adjacent opportunities in
each of the X opportunity windows is $T2$ time units, and $T2$ is 0 or a positive number.

29. The apparatus according to any one of claims 25 to 28, wherein
when M is greater than or equal to 2, an interval between any two adjacent opportunity
15 windows in the M opportunity windows is $T3$ time units, and $T3$ is 0 or a positive number.

30. The apparatus according to any one of claims 25 to 29, wherein
the transceiver module is further configured to receive second information, wherein the
second information indicates the N opportunities; and
when determining the N opportunities, the processing module is specifically configured to
20 determine the N opportunities based on the second information.

31. The apparatus according to any one of claims 25 to 30, wherein the two or more of the N
opportunities for data transmission are opportunities in one or more of the M opportunity windows.

32. The apparatus according to claim 31, wherein
the transceiver module is further configured to perform retransmitted data transmission within
25 opportunities in the one or more of the M opportunity windows, wherein an interval between an
end location of a last time unit of an opportunity for data transmission and a start location of a first
time unit of an opportunity for retransmitted data transmission is $T4$ time units, and $T4$ is a positive
number.

33. A communication apparatus, wherein the apparatus comprises:
30 a processing module, configured to determine N opportunities, wherein the N opportunities
are within a first time range, and N is a positive integer greater than or equal to 2; and
the first time range comprises M opportunity windows, an i th opportunity window in the M
opportunity windows comprises N_i opportunities in the N opportunities, N_i is a positive integer,
 M is a positive integer, and $i=1, 2, \dots, M$; and

35 a transceiver module, configured to perform data transmission within two or more of the N

opportunities.

34. The apparatus according to claim 33, wherein
the transceiver module is further configured to send first information, wherein the first
information indicates a length of the first time range.

35. The apparatus according to claim 33 or 34, wherein
 $M < N$, the M opportunity windows comprise X opportunity windows, each of the X
opportunity windows comprises two or more of the N opportunities, and X is a positive integer
less than or equal to M .

36. The apparatus according to claim 35, wherein
when X is equal to 1, an interval between any two adjacent opportunities in the X opportunity
windows is $T1$ time units, and $T1$ is 0 or a positive number; or
when X is greater than or equal to 2, an interval between any two adjacent opportunities in
each of the X opportunity windows is $T2$ time units, and $T2$ is 0 or a positive number.

37. The apparatus according to any one of claims 33 to 36, wherein
when M is greater than or equal to 2, an interval between any two adjacent opportunity
windows in the M opportunity windows is $T3$ time units, and $T3$ is 0 or a positive number.

38. The apparatus according to any one of claims 33 to 37, wherein
the transceiver module is further configured to send second information, wherein the second
information indicates the N opportunities; and
when determining the N opportunities, the processing module is specifically configured to
determine the N opportunities based on the second information.

39. The apparatus according to any one of claims 33 to 38, wherein the two or more of the N
opportunities for data transmission are opportunities in one or more of the M opportunity windows.

40. The apparatus according to claim 39, wherein
the transceiver module is further configured to perform retransmitted data transmission within
opportunities in the one or more of the M opportunity windows, wherein an interval between an
end location of a last time unit of an opportunity for data transmission and a start location of a first
time unit of an opportunity for retransmitted data transmission is $T4$ time units, and $T4$ is a positive
number.

41. A communication apparatus, wherein the apparatus comprises:
a transceiver module, configured to receive third information, wherein the third information
indicates a length of each of a plurality of time ranges, and at least two of the plurality of time
ranges have different lengths; and
the transceiver module is further configured to perform data transmission within the plurality
of time ranges.

42. The apparatus according to claim 41, wherein

a correspondence exists between the length of each time range and data.

43. The apparatus according to claim 42, wherein a length of an nth time range in the plurality of time ranges satisfies the following formula:

the length of the nth time range = $\text{fun}(T \times n) - \text{fun}[T \times (n - 1)]$, wherein

T is periodicity of the data, fun represents a rounding function, and n is a positive integer.

44. The apparatus according to claim 41, wherein

the length of each of the plurality of time ranges comprises at least a length of first periodicity and an offset corresponding to each of the plurality of time ranges.

45. A communication apparatus, wherein the apparatus comprises:

a transceiver module, configured to send third information, wherein the third information indicates a length of each of a plurality of time ranges, and at least two of the plurality of time ranges have different lengths; and

the transceiver module is further configured to perform data transmission within the plurality of time ranges.

46. The apparatus according to claim 45, wherein a correspondence exists between the length of each time range and data.

47. The apparatus according to claim 46, wherein a length of an nth time range in the plurality of time ranges satisfies the following formula:

the length of the nth time range = $\text{fun}(T \times n) - \text{fun}[T \times (n - 1)]$, wherein

T is periodicity of the data, fun represents a rounding function, and n is a positive integer.

48. The apparatus according to claim 46, wherein

the length of each of the plurality of time ranges comprises at least a length of the first periodicity and an offset corresponding to each of the plurality of time ranges.

29. A communication apparatus, configured to implement the method steps as claimed in any one of claims 1 to 7.

30. A communication apparatus, configured to implement the method steps as claimed in any one of claims 8 to 14.

31. A communication apparatus, comprising a processor and a communication interface, wherein the communication interface is configured to: receive a signal from a communication apparatus other than the communication apparatus and transmit the signal to the processor, or send a signal from the processor to a communication apparatus other than the communication apparatus; and the processor is configured to implement, by using a logic circuit or executing code

instructions, the method according to any one of claims 1 to 7, or 8 to 14~~1 to 8, 9 to 16, 17 to 20, or 21 to 24.~~

5 5032. A computer-readable storage medium, wherein the computer-readable storage medium stores a computer program, and when the computer program is run, the method according to any one of claims 1 to 7, or 8 to 14~~1 to 8, 9 to 16, 17 to 20, or 21 to 24~~ is implemented.

10 5133. A computer program product, wherein the computer program product comprises computer program code, and when the computer program code is run, the method according to any one of claims 1 to 7, or 8 to 14~~1 to 8, 9 to 16, 17 to 20, or 21 to 24~~ is implemented.