

CLAIMS

1. A method for uplink transmission, applied to a first terminal, the method comprising:
 - determining first slot(s), wherein
 - each first slot represents an available slot for Physical Uplink Shared Channel (PUSCH) transmission or PUSCH repetition transmission, and a number of available or valid symbol(s) of the first slot is greater than or equal to a number of symbol(s) indicated for each transmission or each repetition transmission.
2. The method of claim 1, wherein the available symbol(s) of the first slot exclude:
 - a symbol carrying a type 0-Physical Downlink Control Channel (PDCCH) Common Search Space (type 0-PDCCH CSS); and/or
 - a flexible symbol carrying a Synchronization Signal Block (SSB).
3. The method of claim 1 or 2, wherein determining the first slot(s) comprises:
 - determining the first slot(s) and available resource of the first slot(s) based on uplink slot(s) and uplink symbol(s) indicated by configuration information of Time Division Duplexing (TDD).
4. The method of claim 1 or 2, wherein determining the first slot(s) comprises:
 - determining the first slot(s) and available resource of the first slot(s) based on uplink slot(s), uplink symbol(s), flexible slot(s) and flexible symbol(s) indicated by configuration information of Time Division Duplexing (TDD).
5. The method of claim 4, wherein when receiving a first Slot Format Indication (SFI), the method further comprises:
 - assuming that the first SFI does not affect the determination of the first slot(s) by the first terminal; and/or
 - not expecting that the first SFI changes or affects the determination of the first slot(s) by the first terminal; and/or
 - in a case that the first SFI indicates flexible symbol(s) are updated to downlink symbol(s) and if uplink symbol(s) after updating and/or flexible symbol(s) after updating

cannot meet PUSCH transmission or PUSCH repetition transmission, counting in one repetition transmission for a corresponding first slot, and not performing PUSCH transmission or PUSCH repetition transmission on the corresponding first slot; and/or

in a case that the first SFI indicates flexible symbol(s) are updated to downlink symbol(s) and if the uplink symbol(s) after updating and/or the flexible symbol(s) after updating cannot meet PUSCH transmission PUSCH repetition transmission, performing PUSCH transmission or PUSCH repetition transmission only on a part of resource.

6. The method of claim 1 or 2, wherein determining the first slot(s) comprises:

determining the first slot(s) and available resource of the first slot(s) based on uplink slot(s) and uplink symbol(s) indicated by configuration information of Time Division Duplexing (TDD) and a second Slot Format Indication (SFI); or

determining the first slot(s) and available resource of the first slot(s) based on uplink slot(s), uplink symbol(s), flexible slot(s) and flexible symbol(s) indicated by configuration information of TDD and a second SFI, wherein

the second SFI represents a last SFI received by the first terminal before receiving first Downlink Control Information (DCI), wherein the first DCI is used for indicating PUSCH transmission or PUSCH repetition transmission.

7. The method of claim 6, further comprising:

in a case that the first terminal receives a third SFI after receiving the second SFI, assuming that the third SFI does not change the determination of the first slot(s) by the first terminal; and/or

not expecting that the third SFI changes the determination of the first slot(s) by the first terminal.

8. The method of claim 7, further comprising:

in a case that the first slot(s) and the available resource of the first slot(s) are determined based on the uplink slot(s) and the uplink symbol(s) in the uplink slot(s) indicated in the configuration information of the TDD and the second SFI, not updating uplink symbol(s) indicated by the second SFI to flexible symbol(s) or downlink symbol(s).

9. The method of claim 6, further comprising:

in a case that a third SFI indicates that uplink symbol(s) indicated by the second SFI is updated to flexible symbol(s) or downlink symbol(s) and if the uplink symbol(s) after updating and/or the flexible symbol(s) after updating cannot meet PUSCH transmission or PUSCH repetition transmission,

not performing PUSCH transmission or PUSCH repetition transmission on a corresponding first slot, and counting in one repetition transmission for the corresponding first slot; or

performing the PUSCH transmission or the PUSCH repetition transmission only on a part of resource.

10. The method of claim 1, further comprising:

in a case that a first cancellation indication (CI) is received when performing the PUSCH transmission or the PUSCH repetition transmission based on the determined first slot(s),

cancelling corresponding PUSCH transmission or corresponding PUSCH repetition transmission, and counting in one repetition transmission for corresponding PUSCH transmission or corresponding PUSCH repetition transmission; or

performing PUSCH transmission or PUSCH repetition transmission only on a part of resource,

wherein cancelled resource indicated by the first CI overlaps with corresponding PUSCH transmission or corresponding PUSCH repetition transmission, or overlaps with slot(s) of corresponding PUSCH transmission or corresponding PUSCH repetition transmission.

11. The method of claim 10, wherein cancelled symbols indicated by the first CI comprises a first symbol, a second symbol and symbol(s) between the first symbol and the second symbol, wherein the first symbol represents a last symbol of received Physical Downlink Control Channel (PDCCH) carrying the first CI, and the second symbol represents a first symbol after elapsing a processing delay and a time offset.

12. The method of claim 10, wherein Physical Downlink Control Channel (PDCCH) carrying the first CI does not need to be sent before first Downlink Control Information (DCI) or PDCCH carrying the first CI does not need to be received by the first terminal before first DCI, wherein the first DCI is used for indicating PUSCH transmission or PUSCH repetition transmission.

13. The method of claim 1, wherein a priority of PUSCH transmission or PUSCH repetition transmission is a high priority, and when the first slot(s) is determined, the method further comprises:

determining a third symbol, a fourth symbol and/or a fifth symbol as available symbol(s), wherein

the third symbol represents a symbol in which a Sounding Reference Signal (SRS) can be configured or is configured, the fourth symbol represents a symbol indicated for PUSCH transmission or PUSCH repetition transmission and a network side triggers the first terminal to send an aperiodic SRS on the fourth symbol, and the fifth symbol represents a symbol indicated for PUSCH transmission or PUSCH repetition transmission and a transmission of a periodic and/or a semi-persistent SRS on the fifth symbol overlaps with corresponding PUSCH transmission or corresponding PUSCH repetition transmission.

14. The method of claim 1, wherein a priority of PUSCH transmission or PUSCH repetition transmission is a low priority, and the method further comprises:

when a network side triggers the first terminal to send an aperiodic Sounding Reference Signal (SRS), and a symbol for sending the aperiodic SRS overlaps with a symbol indicated for PUSCH transmission or PUSCH repetition transmission,

cancelling corresponding PUSCH transmission or corresponding PUSCH repetition transmission, and counting in one repetition transmission for corresponding PUSCH transmission or corresponding PUSCH repetition transmission; or

performing PUSCH transmission or PUSCH repetition transmission only on a part of resource;

or

when a transmission of a periodic SRS overlaps with corresponding PUSCH transmission or corresponding PUSCH repetition transmission, performing corresponding PUSCH transmission or corresponding PUSCH repetition transmission.

15. The method of claim 1, wherein a priority of PUSCH transmission or PUSCH repetition transmission is a low priority, and when the first slot(s) is determined, the method further comprises:

determining a sixth symbol as an available symbol, wherein

the sixth symbol represents a symbol in which a semi-persistent Sounding Reference

Signal (SRS) is configured and is not activated.

16. The method of claim 15, further comprising:

in a case that the semi-persistent SRS is activated when PUSCH transmission or PUSCH repetition transmission is performed on the sixth symbol,

cancelling corresponding PUSCH transmission or corresponding PUSCH repetition transmission, and counting in one repetition transmission for corresponding PUSCH transmission or corresponding PUSCH repetition transmission; or

performing PUSCH transmission or PUSCH repetition transmission only on a part of resource.

17. An apparatus for uplink transmission, comprising:

a first determination unit, configured to determine first slot(s), wherein each first slot represents an available slot for Physical Uplink Shared Channel (PUSCH) transmission or PUSCH repetition transmission, and a number of available symbol(s) of the first slot is greater than or equal to a number of symbol(s) indicated for each PUSCH transmission or each PUSCH repetition transmission.

18. A first terminal, comprising: a first processor and a first communication interface, wherein the first processor is configured to determine first slot(s), wherein

each first slot represents an available slot for Physical Uplink Shared Channel (PUSCH) transmission or PUSCH repetition transmission, and a number of available or valid symbol(s) of the first slot is greater than or equal to a number of symbol(s) indicated for each PUSCH transmission or each PUSCH repetition transmission.

19. A first terminal, comprising a first processor and a first memory for storing a computer program capable of running on a processor,

wherein the first processor is configured to perform operations of the method of claim 1 to 16 when running the computer program.

20. A storage medium storing a computer program, wherein when the computer program is executed by a processor, operations of the method of any one of claims 1 to 16 are implemented.