

WHAT IS CLAIMED IS:

1. A method for uplink transmission, applicable to User Equipment (UE) and comprising:

determining a time-domain overlapping channel group to be transmitted in a time unit, where the time-domain overlapping channel group comprises a group of Physical Uplink Control Channels (PUCCHs) and a group of Physical Uplink Shared Channels (PUSCHs), the group of PUCCHs and the group of PUSCHs comprise a PUCCH and PUSCH that overlap in time-domain, the PUCCH comprised in the group of PUCCHs being configured to transmit an uplink Scheduling Request (SR), and the PUSCH comprised in the group of PUSCHs being configured to transmit uplink data; and

performing multiplexing transmission on Uplink Control Information (UCI) and uplink data to be transmitted by the time-domain overlapping channel group, wherein the UCI comprises the uplink SR, the PUCCH configured to transmit the uplink SR is overlapped in the time domain with a PUCCH configured to transmit a Hybrid Automatic Repeat reQuest (HARQ); and the PUCCH configured to transmit the HARQ is overlapped in the time domain with the PUSCH configured to transmit the uplink data,

wherein the performing multiplexing transmission on the UCI and uplink data to be transmitted by the time-domain overlapping channel group comprises,

removing the uplink SR from the UCI;

performing channel coding and modulation on the uplink data and other UCI than the uplink SR, and mapping the uplink data and the other UCI to a time-frequency resource for the PUSCH transmission; and

dropping transmission of the PUCCHs comprised in the time-domain overlapping channel group.

2. ~~The method of claim 1, wherein the performing multiplexing transmission on the UCI and uplink data to be transmitted by the time-domain overlapping channel group, comprising:~~

~~removing the uplink SR from the UCI;~~

~~performing channel coding and modulation on the uplink data and other UCI than the~~

uplink SR, and mapping the uplink data and said other UCI to a time-frequency resource for the PUSCH transmission; and

~~dropping transmission of the PUCCHs comprised in the time-domain overlapping channel group.~~

3. The method of claim 1, wherein the performing multiplexing transmission on the UCI and uplink data to be transmitted by the time-domain overlapping channel group, comprising:

~~performing channel coding and modulation on the uplink data and the UCI comprising the uplink SR, and mapping the UCI comprising the uplink SR and the uplink data to the time-frequency resource for the PUSCH transmission; and~~

~~dropping transmission of the PUCCHs comprised in the time-domain overlapping channel group.~~

4. The method of claim 3, wherein the performing channel coding and modulation on the uplink data and the UCI comprising the uplink SR and mapping the UCI and the uplink data to the time-frequency resource for the PUSCH transmission, comprising:

~~performing independent channel coding and modulation on bit information of the uplink SR according to a channel coding and modulation manner for the uplink SR; and~~

~~mapping a modulation symbol of the modulated uplink SR and the modulated uplink data to the time-frequency resource for the PUSCH transmission.~~

5. The method of claim 3, wherein the performing channel coding and modulation on the uplink data and the UCI comprising the uplink SR and mapping the UCI and the uplink data to the time-frequency resource for the PUSCH transmission, comprising:

~~merging bit information of the uplink SR and bit information of other UCI than the uplink SR;~~

~~performing independent channel coding and modulation on the merged bit information of the UCI according to a channel coding and modulation manner for said other UCI; and~~

~~mapping a modulation symbol of the modulated UCI and the modulated uplink data to the~~

~~time-frequency resource for the PUSCH transmission.~~

~~6. The method of claim 3, wherein the performing channel coding and modulation on the uplink data and all the UCI comprising the uplink SR and mapping the UCI and the uplink data to the time-frequency resource for of the PUSCH transmission, comprising:~~

~~performing independent channel coding and modulation on bit information of the uplink SR according to a channel coding and modulation manner for a pre-configured type of other UCI; and~~

~~mapping a modulation symbol of the modulated uplink SR and the modulated uplink data to the time-frequency resource for the PUSCH transmission.~~

~~7. The method of claim 5 or 6, wherein said other UCI at least comprises one of:~~

~~uplink Hybrid Automatic Repeat reQuest (HARQ) feedback information and Channel State Information (CSI).~~

~~8. The method of claim 1, wherein the performing multiplexing transmission on the UCI and uplink data to be transmitted by the time-domain overlapping channel group, comprising:~~

~~transmitting the uplink SR through the PUCCH;~~

~~performing channel coding and modulation on the uplink data and other UCI than the uplink SR, and mapping the uplink data and said other UCI to the time-frequency resource for the PUSCH transmission; and~~

~~dropping transmission of other PUCCHs than the PUCCH transmitting the uplink SR in the time-domain overlapping channel group.~~

92. A method for uplink transmission, applicable to a base station and comprising:

determining a time-domain overlapping channel group to be transmitted in a time unit, wherein the time-domain overlapping channel group comprises a group of Physical Uplink Control Channels (PUCCHs) and a group of Physical Uplink Shared Channels (PUSCHs), the group of PUCCHs and the group of PUSCHs comprise a PUCCH and PUSCH that overlap in

time_domain, the PUCCH comprised in the group of PUCCHs is configured to transmit an uplink Scheduling Request (SR), and the PUSCH comprised in the group of PUSCHs is configured to transmit uplink data; and

receiving multiplexing transmission of Uplink Control Information (UCI) and uplink data to be transmitted by the time-domain overlapping channel group, wherein the UCI comprises the uplink SR; the PUCCH configured to transmit the uplink SR is overlapped in the time domain with a PUCCH configured to transmit a Hybrid Automatic Repeat request (HARQ); and the PUCCH configured to transmit the HARQ is overlapped in the time domain with the PUSCH configured to transmit the uplink data,

wherein the receiving multiplexing transmission of the UCI and uplink data to be transmitted by the time-domain overlapping channel group comprises,

receiving a modulation symbol of the uplink data and other UCI than the uplink SR in the PUSCH transmitting the uplink data; and

cancelling reception of the uplink SR.

~~10. The method of claim 9, wherein the receiving multiplexing transmission of the UCI and uplink data to be transmitted by the time domain overlapping channel group, comprising:~~

~~receiving a modulation symbol of the uplink data and other UCI than the uplink SR in the PUSCH transmitting the uplink data; and~~

~~cancelling reception of the uplink SR.~~

~~11. The method of claim 9, wherein receiving multiplexing transmission of the UCI to be transmitted by the time domain overlapping channel group comprises:~~

~~receiving the UCI comprising the uplink SR in the PUSCH transmitting the uplink data; and~~

~~obtaining the uplink SR subjected to the multiplexing transmission according to a channel decoding and demodulation manner for the uplink SR; or~~

~~obtaining the uplink SR subjected to the multiplexing transmission according to a channel~~

~~decoding and demodulation manner for a pre-configured type of other UCI; or~~

~~obtaining the uplink SR subjected to the multiplexing transmission according to a channel decoding and demodulation manner for said other UCI than the uplink SR in the PUSCH.~~

~~12. The method of claim 9, wherein receiving multiplexing transmission of the UCI and uplink data to be transmitted by the time-domain overlapping channel group comprises:~~

~~receiving a modulation symbol of the uplink data and other UCI than the uplink SR in the PUSCH transmitting the uplink data; and~~

~~receiving the uplink SR in the PUCCH transmitting the uplink SR.~~

~~13. An apparatus for uplink transmission, comprising:~~

~~a determination module, configured to determine a time-domain overlapping channel group to be transmitted in a time unit, where the time-domain overlapping channel group comprises a group of Physical Uplink Control Channels (PUCCHs) and a group of Physical Uplink Shared Channels (PUSCHs), the group of PUCCHs and the group of PUSCHs comprise a PUCCH and PUSCH that overlap in time domain, the PUCCH comprised in the group of PUCCHs being configured to transmit an uplink Scheduling Request (SR), and the PUSCH comprised in the group of PUSCHs being configured to transmit uplink data; and~~

~~a transmission module, configured to perform multiplexing transmission on Uplink Control Information (UCI) and uplink data to be transmitted by the time-domain overlapping channel group, the UCI comprising the uplink SR.~~

~~14. The apparatus of claim 13, wherein the transmission module comprises:~~

~~a removal submodule, configured to remove the uplink SR from the UCI;~~

~~a first processing submodule, configured to perform channel coding and modulation on the uplink data and other UCI than the uplink SR, and map the uplink data and said other UCI to a time-frequency resource for the PUSCH transmission; and~~

~~a first dropping submodule, configured to drop transmission of the PUCCHs comprised in the time-domain overlapping channel group.~~

15. ~~The apparatus of claim 13, wherein the transmission module comprises:~~

~~a second processing submodule, configured to perform channel coding and modulation on the uplink data and the UCI comprising the uplink SR, and map the UCI comprising the uplink SR and the uplink data to the time-frequency resource for the PUSCH transmission; and~~

~~a first dropping submodule, configured to drop transmission of the PUCCHs comprised in the time-domain overlapping channel group.~~

16. ~~The apparatus of claim 15, wherein the second processing submodule is configured to perform channel coding and modulation on bit information of the uplink SR according to a channel coding and modulation manner for the uplink SR and map a modulation symbol of the modulated uplink SR and the modulated uplink data to the time-frequency resource for the PUSCH transmission.~~

17. ~~The apparatus of claim 15, wherein the second processing submodule is configured to merge bit information of the uplink SR and bit information of other UCI than the uplink SR, perform independent channel coding and modulation on the merged bit information of the UCI according to a channel coding and modulation manner for said other UCI, and map a modulation symbol of the modulated UCI and the modulated uplink data to the time-frequency resource for the PUSCH transmission.~~

18. ~~The apparatus of claim 15, wherein the second processing submodule is configured to perform independent channel coding and modulation on the bit information of the uplink SR according to a channel coding and modulation manner for a pre-configured type of other UCI and map a modulation symbol of the modulated uplink SR and the modulated uplink data to the time-frequency resource for the PUSCH transmission.~~

19. ~~The apparatus of claim 17 or 18, wherein said other UCI at least comprises one of:~~

~~uplink Hybrid Automatic Repeat reQuest (HARQ) feedback information and Channel~~

State Information (CSI).

20.— The apparatus of claim 13, wherein the transmission module comprises:

- a transmission submodule, configured to transmit the uplink SR through the PUCCH;
- a third processing submodule, configured to perform channel coding and modulation on the uplink data and other UCI than the uplink SR and map the uplink data and said other UCI to the time-frequency resource for the PUSCH transmission; and
- a second dropping submodule, configured to drop transmission of other PUCCHs than the PUCCH transmitting the uplink SR in the time-domain overlapping channel group.

21.— An apparatus for uplink transmission, applicable to a base station and comprising:

- a determination module, configured to determine a time-domain overlapping channel group to be transmitted in a time unit, wherein the time-domain overlapping channel group comprises a group of Physical Uplink Control Channels (PUCCHs) and a group of Physical Uplink Shared Channels (PUSCHs), the group of PUCCHs and the group of PUSCHs comprise a PUCCH and PUSCH that overlap in time domain, the PUCCH comprised in the group of PUCCHs is configured to transmit an uplink Scheduling Request (SR), and the PUSCH comprised in the group of PUSCHs is configured to transmit uplink data; and
- a receiving module, configured to receive multiplexing transmission of Uplink Control Information (UCI) and uplink data to be transmitted by the time-domain overlapping channel group, the UCI comprising the uplink SR.

22.— The apparatus of claim 21, wherein the receiving module comprises:

- a first receiving submodule, configured to receive a modulation symbol of the uplink data and other UCI than the uplink SR in the PUSCH transmitting the uplink data; and
- a cancelling submodule, configured to cancel reception of the uplink SR.

23.— The apparatus of claim 21, wherein the receiving module comprises:

- a second receiving submodule, configured to receive the UCI comprising the uplink SR

in the PUSCH transmitting the uplink data; and

~~a first decoding and demodulation submodule, configured to obtain the uplink SR subjected to the multiplexing transmission according to a channel decoding and demodulation manner for the uplink SR, or~~

~~a second decoding and demodulation submodule, configured to obtain the uplink SR subjected to the multiplexing transmission according to a channel decoding and demodulation manner for a pre-configured type of other UCI, or~~

~~a third decoding and demodulation submodule, configured to obtain the uplink SR subjected to the multiplexing transmission according to a channel decoding and demodulation manner for said other UCI than the uplink SR in the PUSCH.~~

24. ~~The apparatus of claim 21, wherein the receiving module comprises:~~

~~a third receiving submodule, configured to receive a modulation symbol of the uplink data and other UCI than the uplink SR in the PUSCH transmitting the uplink data; and~~

~~a fourth receiving submodule, configured to receive the uplink SR in the PUCCH transmitting the uplink SR.~~

253. An apparatus for uplink transmission, comprising:

a processor; and

memory configured to store instructions executable by the processor,

wherein the processor is configured to:

determine a time-domain overlapping channel group to be transmitted in a time unit, where the time-domain overlapping channel group comprises a group of Physical Uplink Control Channels (PUCCHs) and a group of Physical Uplink Shared Channels (PUSCHs), the group of PUCCHs and the group of PUSCHs comprise a PUCCH and PUSCH that overlap in time domain, the PUCCH comprised in the group of PUCCHs being configured to transmit an uplink Scheduling Request (SR), and the PUSCH comprised in the group of PUSCHs being configured to transmit uplink data; and

perform multiplexing transmission on Uplink Control Information (UCI) and uplink data

to be transmitted by the time-domain overlapping channel group, the UCI comprising the uplink SR, the PUCCH configured to transmit the uplink SR is overlapped in the time domain with a PUCCH configured to transmit a Hybrid Automatic Repeat request (HARQ); and the PUCCH configured to transmit the HARQ is overlapped in the time domain with the PUSCH configured to transmit the uplink data,

wherein the processor is further configured to,

remove the uplink SR from the UCI;

perform channel coding and modulation on the uplink data and other UCI than the uplink SR, and map the uplink data and the other UCI to a time-frequency resource for the PUSCH transmission; and

drop transmission of the PUCCHs comprised in the time-domain overlapping channel group.

264. An apparatus for uplink transmission, comprising:

a processor; and

memory configured to store instructions executable by the processor,

wherein the processor is configured to:

determine a time-domain overlapping channel group to be transmitted in a time unit, where the time-domain overlapping channel group comprises a group of Physical Uplink Control Channels (PUCCHs) and a group of Physical Uplink Shared Channels (PUSCHs), the group of PUCCHs and the group of PUSCHs comprise a PUCCH and PUSCH that overlap in time domain, the PUCCH comprised in the group of PUCCHs being configured to transmit an uplink Scheduling Request (SR), and the PUSCH comprised in the group of PUSCHs being configured to transmit uplink data; and

receive multiplexing transmission of Uplink Control Information (UCI) and uplink data to be transmitted by the time-domain overlapping channel group, the UCI comprising the uplink SR, the PUCCH configured to transmit the uplink SR is overlapped in the time domain with a PUCCH configured to transmit a Hybrid Automatic Repeat request (HARQ); and the PUCCH configured to transmit the HARQ is overlapped in the time domain with the PUSCH

configured to transmit the uplink data,

wherein the processor is further configured to,

receive a modulation symbol of the uplink data and other UCI than the uplink SR in the PUSCH transmitting the uplink data; and

cancel reception of the uplink SR.

~~275.~~ A computer-readable storage medium, having stored computer instructions therein that, when executed by a processor, implement the method of claim 1 or the method of claim 2~~any one of claims 1-8.~~

~~28.—A computer-readable storage medium, having stored computer instructions therein that, when executed by a processor, implement the method of any one of claims 9-12.~~