

CLAIMS

1. An uplink channel configuration method, applied to a network-side device and comprising:

sending indication information to a terminal, wherein the indication information is used to indicate an uplink channel related transmission parameter, the transmission parameter corresponds to ~~N uplink channels and/or~~ at least two target transmissions of a target uplink channel, wherein the target transmission is a repeated transmission and N is an integer greater than 1;

wherein the indication information comprises third sub indication information, and the third sub indication information is used to indicate spatial relation information of at least two target transmissions of the target uplink channel,

wherein the number of pieces of spatial relation information is greater than 1.

2. An uplink channel transmission method, applied to a terminal and comprising:

performing transmission of an uplink channel according to an uplink channel related transmission parameter, wherein the transmission parameter corresponds to ~~N uplink channels and/or~~ at least two target transmissions of a target uplink channel, wherein the target transmission is a repeated transmission and N is an integer greater than 1;

wherein the indication information comprises third sub indication information, and the third sub indication information is used to indicate spatial relation information of at least two target transmissions of the target uplink channel,

wherein the number of pieces of spatial relation information is greater than 1.

3. The method according to claim 2, wherein the transmission parameter comprises a predefined number of layers of an uplink channel, and the number of layers is 1.

4. The method according to claim 2, wherein in a case that the transmission parameter corresponds to at least two target transmissions of a target uplink channel, the transmission parameter comprises: a predefined first association between the number of target transmissions of a target uplink channel and precoding information,

and/or a predefined second association between the number of target transmissions of a target uplink channel and spatial relation information.

5. The method according to claim 2, wherein before the performing transmission of an uplink channel according to an uplink channel related transmission parameter, the method further comprises:

receiving indication information sent by a network-side device, wherein the indication information is used to indicate the uplink channel related transmission parameter.

~~6. The method according to claim 5, wherein~~

~~in a case that the transmission parameter corresponds to N uplink channels, the N uplink channels correspond to M transmission and reception points TRPs, and M is an integer greater than 1; or~~

~~in a case that the transmission parameter corresponds to at least two target transmissions of a target uplink channel, the target transmission is: a repeated transmission, a frequency hopping transmission, or a fractional transmission.~~

~~76.~~ The method according to claim ~~65~~, wherein the TRP is defined by at least one of the following: a control resource set or a control resource set group; an explicitly defined TRP; a transmission configuration indication state, a transmission configuration indication state list or a transmission configuration indication state pool; quasi co-location QCL information or QCL group information; spatial relation information or spatial relation group information; a physical downlink control channel PDCCH scrambling identifier or a PDCCH scrambling identifier group; a physical downlink shared channel PDSCH scrambling identifier or a PDSCH scrambling identifier group; a PDCCH-Config information element; and a PDSCH-Config information element.

~~87.~~ The method according to claim 5, wherein in a case that the uplink channel is a physical uplink shared channel PUSCH, the indication information is transmitted through downlink control information DCI.

98. The method according to claim 87, wherein the DCI comprises a first signaling field, and the first signaling field is used to indicate an uplink transmission scheme for the PUSCH;

wherein the uplink transmission scheme comprises at least one of the following: diversity based PUSCH, codebook based PUSCH, and non-codebook based PUSCH;

or,

wherein the DCI comprises a second signaling field, and the second signaling field is used to indicate precoding information of the PUSCH.

109. The method according to claim 98, wherein the first signaling field is a precoding information and number of layers signaling field, and the precoding information and number of layers signaling field uses a first codepoint to indicate the uplink transmission scheme for the PUSCH.

110. The method according to claim 109, wherein in a case that the first codepoint is a reserved codepoint, a new codepoint, a codepoint for which a transmitted precoding matrix indicator TPMI is a special value, or a codepoint for which the number of layers is a special value, the uplink transmission scheme for the PUSCH indicated by the first codepoint is: diversity based PUSCH or non-codebook based PUSCH.

121. The method according to claim 98, wherein in a case that the precoding information corresponds to N codebook based PUSCHs, the second signaling field is a precoding information and number of layers signaling field; and

the DCI uses one precoding information and number of layers signaling field to indicate precoding information of the N codebook based PUSCHs; or

the DCI uses N precoding information and number of layers signaling fields to indicate precoding information of the N codebook based PUSCHs;

or,

wherein in a case that the precoding information corresponds to a diversity based PUSCH, the second signaling field is a precoding information and number of layers signaling field, and the precoding information and number of layers signaling field uses a reserved codepoint to indicate precoding information of the diversity based PUSCH;

or,

wherein in a case that the precoding information corresponds to at least two target transmissions of a target PUSCH, the DCI further comprises a third signaling field, and the third signaling field is used to indicate the number of target transmissions of the target PUSCH;

or,

wherein

in a case that the precoding information corresponds to at least two target transmissions of a codebook based target PUSCH, the second signaling field is a precoding information and number of layers signaling field; or

in a case that the precoding information corresponds to at least two target transmissions of a non-codebook based target PUSCH, the second signaling field is a sounding reference signal resource indicator SRI signaling field.

~~1312.~~ The method according to claim 5, wherein the uplink channel is a physical uplink control channel PUCCH, and the indication information is transmitted through at least one of radio resource control RRC layer information, medium access control MAC layer information, and physical layer control information,

wherein the RRC layer information comprises RRC signaling; the MAC layer information comprises a MAC control element CE; and the physical layer control information comprises DCI.

~~14. The method according to claim 13, wherein in a case that the transmission parameter corresponds to N PUCCHs, the indication information comprises a first sub indication information, the first sub indication information is used to indicate Q pieces of spatial relation information, and Q is an integer greater than or equal to N.~~

~~15. The method according to claim 14, wherein the first sub indication information comprises G groups of spatial relation information, and the spatial relation information of the G groups of spatial relation information constitutes the Q pieces of spatial relation information,~~

~~wherein G is equal to 1; or, G is equal to N; or, a value of G is equal to the number of groups that the N PUCCHs are divided to;~~

~~and/or,~~

~~wherein in a case that Q is greater than N , the indication information further comprises second sub indication information, and the second sub indication information is used to indicate spatial relation information of each PUCCH of the N PUCCHs.~~

~~16. The method according to claim 5, wherein in a case that the transmission parameter corresponds to at least two target transmissions of a target uplink channel, the indication information comprises third sub indication information, and the third sub indication information is used to indicate spatial relation information of at least two target transmissions of the target uplink channel,~~

~~wherein the number of pieces of spatial relation information is equal to or not equal to the number of target transmissions of the target uplink channel.~~

~~1713.~~ The method according to claim ~~162~~, wherein in a case that the number of pieces of spatial relation information is less than the number of target transmissions of the target uplink channel, the performing transmission of an uplink channel according to an uplink channel related transmission parameter comprises:

performing J target transmissions of at least two target transmissions of the target uplink channel by reusing first spatial relation information in the spatial relation information;

or,

wherein in a case that the number of pieces of spatial relation information is greater than the number of target transmissions of the target uplink channel, the performing transmission of an uplink channel according to an uplink channel related transmission parameter comprises:

performing at least two target transmissions of the target uplink channel by using second spatial relation information in the spatial relation information, the number of pieces of second spatial relation information being equal to the number of target transmissions of the target uplink channel.

~~1814.~~ The method according to claim ~~1713~~, wherein the J target transmissions are any one of the following transmissions:

an odd number of target transmissions of at least two target transmissions of the target uplink channel;

an even number of target transmissions of at least two target transmissions of the target uplink channel;

first J target transmissions of at least two target transmissions of the target uplink channel; and

last J target transmissions of at least two target transmissions of the target uplink channel.

~~1915~~. A network-side device, comprising:

a sending module, configured to send indication information to a terminal, wherein the indication information is used to indicate an uplink channel related transmission parameter, the transmission parameter corresponds to ~~N uplink channels and/or~~ at least two target transmissions of a target uplink channel, wherein the target transmission is a repeated transmission and N is an integer greater than 1;

wherein the indication information comprises third sub indication information, and the third sub indication information is used to indicate spatial relation information of at least two target transmissions of the target uplink channel,

wherein the number of pieces of spatial relation information is greater than 1.

~~2016~~. A terminal, comprising:

a transmission module, configured to perform transmission of an uplink channel according to an uplink channel related transmission parameter, wherein the transmission parameter corresponds to ~~N uplink channels and/or~~ at least two target transmissions of a target uplink channel, wherein the target transmission is a repeated transmission and N is an integer greater than 1;

wherein the indication information comprises third sub indication information, and the third sub indication information is used to indicate spatial relation information of at least two target transmissions of the target uplink channel,

wherein the number of pieces of spatial relation information is greater than 1.