

WHAT IS CLAIMED IS:

1. A method of transmitting uplink control information (UCI) to a base station (BS) by a user equipment (UE) in a wireless communication system, the method comprising:

mapping the UCI including acknowledgement information and Channel State information (CSI) to a physical uplink shared channel (PUSCH),

wherein the acknowledgement information is mapped to the PUSCH by applying either rate-matching or puncturing to resources for transmitting the acknowledgement information on the PUSCH based on a size of the acknowledgement information,

wherein the CSI including CSI part 1 and CSI part 2 is mapped to the PUSCH based on reserved resources for the acknowledgement information which is determined based on the size of the acknowledgement information, and

wherein, based on the size of the acknowledgement information, the CSI part 1 is not mapped to the reserved resources and CSI part 2 is mapped to the PUSCH including the reserved resources; and

transmitting the mapped UCI on the PUSCH.

2. The method of claim 1, wherein when the size of the acknowledgement information is more than a predetermined value, the acknowledgement information is mapped to the PUSCH by applying the rate-matching, and

wherein, when the size of the acknowledgement information is equal to or less than the predetermined value, the acknowledgement information is mapped to the PUSCH by applying the puncturing.

3. The method of claim 1, wherein the acknowledgement information is not mapped to any symbol before a symbol where a first demodulation reference signal (DM-RS) is transmitted on the PUSCH.

4. The method of claim 2, wherein the predetermined value is 2 bits.

5. The method of claim 1, wherein the CSI part 1 includes at least one of Rank Indicator (RI) and Channel Quality Information (CQI) for a first transport block, and the

CSI part 2 includes Precoding Matrix Indication (PMI).

6. The method of claim 1, wherein the size of the acknowledgement information is determined based on an uplink downlink assignment index (DAI) value included in an uplink grant received from the BS.

7. The method of claim 1, wherein the amount of the resources for transmitting the acknowledgement information on the PUSCH is determined based on a first beta parameter, and

wherein, when among a plurality of sets configured via a higher layer signaling, one set including a plurality of beta parameters is indicated by an uplink grant and the first beta parameter is determined based on the size of the acknowledgement information among the plurality of beta parameters.

8. The method of claim 1, wherein part or all of the UCI is mapped to resources in a symbol where a demodulation reference signal (DM-RS) is transmitted on the PUSCH.

9. The method of claim 1, wherein when the PUSCH is a semi-persistent scheduling (SPS) PUSCH, the rate-matching or puncturing is performed based on maximum UCI payload dedicated to the SPS PUSCH.

10. The method of claim 1, wherein when the PUSCH is a semi-persistent scheduling (SPS) PUSCH, the rate-matching or puncturing is performed based on a beta offset value included in downlink control information that activates the SPS PUSCH.

11. A user equipment (UE) for transmitting uplink control information (UCI) to a base station (BS) in a wireless communication system, the UE comprising:

a transmitter; and

a processor operably coupled to the transmitter and configured to:

map the UCI including acknowledgement information and Channel State information (CSI) to a physical uplink shared channel (PUSCH),

wherein the acknowledgement information is mapped to the PUSCH by applying either rate-matching or puncturing to resources for transmitting the acknowledgement information on the PUSCH based on a size of the acknowledgement information,

wherein the CSI including CSI part 1 and CSI part 2 is mapped to the PUSCH based on reserved resources for the acknowledgement information which is determined based on the size of the acknowledgement information, and

wherein, based on the size of the acknowledgement information, the CSI part 1 is not mapped to the reserved resources and CSI part 2 is mapped to the PUSCH including the reserved resources; and

transmit the mapped UCI on the PUSCH.

12. The UE of claim 11, wherein when the size of the acknowledgement information is more than a predetermined value, the acknowledgement information is mapped to the PUSCH by applying the rate-matching, and

wherein when the size of the acknowledgement information is equal to or less than the predetermined value, the acknowledgement information is mapped to the PUSCH by applying the puncturing.

13. The UE of claim 11, wherein the acknowledgement information is not mapped to any symbol before a symbol where a first demodulation reference signal (DM-RS) is transmitted on the PUSCH.

14. The UE of claim 12, wherein the predetermined value is 2 bits.

15. The UE of claim 11, wherein the CSI part 1 includes at least one of Rank Indicator, RI, and Channel Quality Information, CQI, for a first transport block, and the CSI part 2 includes Precoding Matrix Indication, PMI.

16. The UE of claim 11, wherein the size of the acknowledgement information is determined based on an uplink downlink assignment index (DAI) value included in an uplink grant received from the BS.

17. The UE of claim 11, wherein the amount of the resources for transmitting the acknowledgement information on the PUSCH is determined based on a first beta parameter, and

wherein when among a plurality of sets configured via a higher layer signaling, one set including a plurality of beta parameters is indicated by an uplink grant and the first beta parameter is determined based on the size of the acknowledgement information among the plurality of beta parameters.

18. The UE of claim 11, wherein part or all of the UCI is mapped to resources in a symbol where a demodulation reference signal (DM-RS) is transmitted on the PUSCH.

19. The UE of claim 11, wherein when the PUSCH is a semi-persistent scheduling (SPS) PUSCH, the rate-matching or puncturing is performed based on maximum UCI payload dedicated to the SPS PUSCH.

20. The UE of claim 11, wherein when the PUSCH is a semi-persistent scheduling (SPS) PUSCH, the rate-matching or puncturing is performed based on a beta offset value included in downlink control information that activates the SPS PUSCH.