CLAIMS

~~**What is claimed is:**~~

1. A method for wireless communications at a user equipment (UE), comprising:

receiving a downlink control information block comprising downlink control information for a plurality of transport blocks scheduled for reception or transmission by the UE, wherein the downlink control information comprises a plurality of fields;

decoding, based on an encoding scheme, the downlink control information block to obtain the downlink control information for the plurality of transport blocks, wherein at least two fields of the downlink control information are jointly decoded according to ~~an~~the encoding scheme, wherein each possible output of the encoding scheme corresponds to a jointly valid combination of the at least two fields; and receiving the plurality of transport blocks from a base station or transmitting the plurality of transport blocks to the base station based at least in part on the downlink control information.

~~receiving the plurality of transport blocks from a base station based at least in part on the downlink control information.~~

2. The method of claim 1, wherein the at least two fields comprise a hybrid automatic repeat request (HARQ) process identifier field and a new data indicator field, and decoding the downlink control information comprises:

omitting new data indicator information from the new data indicator field for unscheduled HARQ processes from the downlink control information block.

3. The method of claim 2, wherein the at least two fields further comprise a redundancy version index field, and decoding the downlink control information further comprises:

omitting redundancy version index information for unscheduled HARQ processes from the downlink control information block.

4. The method of claim 2, wherein the HARQ process identifier field comprises a number of bits equal to a number of transport blocks scheduled by the downlink control information.

5. The method of claim 2, wherein the new data indicator field comprises a number of bits equal to a number of transport blocks scheduled by the downlink control information.

6. The method of claim 1, wherein the plurality of fields comprises a number of repetitions field configured to signal a number of repetitions per transport block of the plurality of transport blocks.

7. The method of claim 6, wherein the at least two fields comprise the number of repetitions field and a redundancy version indicator field, and decoding the downlink control information comprises:

setting a size of the redundancy version indicator field based at least in part on the number of repetitions per transport block signaled by the number of repetitions field.

8. The method of claim 7, wherein setting the size of the redundancy version indicator field comprises one or more of:

setting the size of the redundancy version indicator field to 0 bits if the number of repetitions per transport block is greater than or equal to 4, or setting the size of the redundancy version indicator field to 1 bit if the number of repetitions per transport block is equal to 2, or setting the size of the redundancy version indicator field to 2 bits if the number of repetitions per transport block is equal to 1.

9. The method of claim 6, wherein the at least two fields comprise the number of repetitions field and a modulation and coding scheme indicator field, and decoding the downlink control information comprises:

setting a size of the modulation and coding scheme indicator field based at least in part on one or more of: a number of repetitions per transport block signaled by the number of repetitions field or a channel condition.

10. The method of claim 9, further comprising:

receiving from the base station a message indicating a restriction of values for the modulation and coding scheme indicator field based at least in part on the channel condition.

11. The method of claim 9, wherein the modulation and coding scheme indicator field signals one or more of: a modulation and coding scheme that is common to each transport block of the plurality of transport blocks or a bitmap separately indicating a modulation and coding scheme for each transport block of the plurality of transport blocks.

12. The method of claim 11, further comprising:

receiving from the base station an indication of whether the modulation and coding scheme indicator is to signal the modulation and coding scheme that is common to each transport block of the plurality of transport blocks or the bitmap separately indicating the modulation and coding scheme for each transport block of the plurality of transport blocks.

13. The method of claim 6, wherein the at least two fields comprise the number of repetitions field and a frequency hopping indicator field, and decoding the downlink control information comprises:

omitting the frequency hopping indicator field if a number of repetitions per transport block signaled by the number of repetitions field is equal to 1.

14. The method of claim 6, wherein the number of repetitions field comprises one or more of a number of repetitions that is common to each transport block of the plurality of transport blocks or a bitmap separately indicating a number of repetitions for each transport block of the plurality of transport blocks.

15. The method of claim 14, further comprising:

receiving from the base station an indication of whether the number of repetitions field is to signal the number of repetitions that is common to each transport block of the plurality of transport blocks or the bitmap separately indicating the modulation and coding scheme for each transport block of the plurality of transport blocks.

~~16. A method~~16. An apparatus for wireless communications at a ~~base station,~~ user equipment (UE), comprising:

~~generating downlink control information~~ a processor, memory coupled with the processor; and instructions stored in the memory and executable by the processor to ~~schedule a~~ cause the apparatus to: receive a downlink control information block comprising

downlink control information for a plurality of transport blocks ~~for a user equipment (UE), the downlink control information comprising a plurality of fields;~~

~~encoding~~ scheduled for reception or transmission by the UE, wherein the downlink control information ~~into a~~comprises a plurality of fields; decode, based on an encoding scheme, the downlink control information block to obtain the downlink control information for the plurality of transport blocks, wherein at least two fields of the downlink control information are jointly ~~encoded~~decoded according to ~~an~~the encoding scheme, wherein each possible output of the encoding scheme corresponds to a jointly valid combination of the at least two fields;

~~transmitting the downlink control information block for~~ and receive the plurality of transport blocks ~~to the UE; and~~

~~transmitting~~from a base station or transmit the plurality of transport blocks to the ~~UE~~base station based at least in part on the downlink control information.

~~17. The method~~17. The apparatus of claim 16, wherein the at least two fields comprise a hybrid automatic repeat request (HARQ) process identifier field and a new data indicator field, and ~~encoding~~decoding the downlink control information comprises:

~~omitting~~ omit new data indicator information from the new data indicator field for unscheduled HARQ processes from the downlink control information block.

~~18. The method~~18. The apparatus of claim 17, wherein the at least two fields further comprise a redundancy version index field, and ~~encoding~~decoding the downlink control information further comprises:

~~omitting~~ omit redundancy version index information for unscheduled HARQ processes from the downlink control information block.

~~19. The method~~19. The apparatus of claim 17, wherein the HARQ process identifier field comprises a number of bits equal to a number of transport blocks scheduled by the downlink control information.

~~20. The method~~20. The apparatus of claim 17, wherein the new data indicator field comprises a number of bits equal to a number of transport blocks scheduled by the downlink control information.

~~21. The method~~21. The apparatus of claim 16, wherein the plurality of fields comprises a number of repetitions field configured to signal a number of repetitions per transport block of the plurality of transport blocks.

~~22. The method~~22. The apparatus of claim 21, wherein the at least two fields comprise the number of repetitions field and a redundancy version indicator field, and ~~encoding~~decoding the downlink control information comprises:

~~setting~~ set a size of the redundancy version indicator field based at least in part on the number of repetitions per transport block signaled by the number of repetitions field.

23. The ~~method~~apparatus of claim 22, wherein ~~setting~~the instructions to set the size of the redundancy version indicator field comprises one or more of:

~~setting~~ are executable by the processor to cause the apparatus to: set the size of the redundancy version indicator field to 0 bits if the number of repetitions per transport block is greater than or equal to 4, or setting the size of the redundancy version indicator field to 1 bit if the number of repetitions per transport block is equal to 2, or setting the size of the redundancy version indicator field to 2 bits if the number of repetitions per transport block is equal to 1.

~~24. The method~~24. The apparatus of claim 21, wherein the at least two fields comprise the number of repetitions field and a modulation and coding scheme indicator field, and ~~encoding~~decoding the downlink control information comprises:

~~setting~~ set a size of the modulation and coding scheme indicator field based at least in part on one or more of: a number of repetitions per transport block signaled by the number of repetitions field or a channel condition.

25. The ~~method~~apparatus of claim 24, wherein the instructions are further ~~comprising:~~

~~transmitting~~executable by the processor to ~~the UE~~cause the apparatus to: receive from the base station a message indicating a restriction of values for the modulation and coding scheme indicator field based at least in part on the channel condition.

26. The ~~method~~apparatus of claim 24, wherein the modulation and coding scheme indicator field signals one or more of~~:~~ a modulation and coding scheme that is

common to each transport block of the plurality of transport blocks or a bitmap separately indicating a modulation and coding scheme for each transport block of the plurality of transport blocks.

27. The ~~method~~apparatus of claim 26, wherein the instructions are further ~~comprising:~~

~~transmitting~~executable by the processor to ~~the UE~~cause the apparatus to: receive from the base station an indication of whether the modulation and coding scheme indicator is to signal the modulation and coding scheme that is common to each transport block of the plurality of transport blocks or the bitmap separately indicating the modulation and coding scheme for each transport block of the plurality of transport blocks.

~~28. The method~~28. The apparatus of claim 21, wherein the at least two fields comprise the number of repetitions field and a frequency hopping indicator field, and ~~encoding~~decoding the downlink control information comprises:

~~omitting~~ omit the frequency hopping indicator field if a number of repetitions per transport block signaled by the number of repetitions field is equal to 1.

29. The ~~method~~apparatus of claim 21, wherein the number of repetitions field comprises one or more of~~:~~ a number of repetitions that is common to each transport block of the plurality of transport blocks or a bitmap separately indicating a number of repetitions for each transport block of the plurality of transport blocks.

30. The ~~method~~apparatus of claim 29, wherein the instructions are further ~~comprising:~~

~~transmitting~~executable by the processor to ~~the UE an indication of whether the number of repetitions field is to signal~~cause the ~~number of repetitions that is common to each transport block of the plurality of transport blocks or the bitmap separately indicating the modulation and coding scheme for each transport block of the plurality of transport blocks.~~

~~31. An apparatus for wireless communications at a user equipment (UE), comprising:~~

~~means for receiving a downlink control information block comprising downlink control information for a plurality of transport blocks scheduled for the UE, wherein the downlink control information comprises a plurality of fields;~~

~~means for decoding the downlink control information block to obtain the downlink control information for the plurality of transport blocks, wherein at least two fields of the downlink control information are jointly decoded according to an encoding scheme, wherein each possible output of the encoding scheme corresponds to a jointly valid combination of the at least two fields; and~~

~~means for receiving the plurality of transport blocks~~apparatus to: receive from ~~a~~the base station ~~based at least in part on the downlink control information.~~

~~32. The apparatus of claim 31, wherein the at least two fields comprise a hybrid automatic repeat request (HARQ) process identifier field and a new data indicator field, and decoding the downlink control information further comprises:~~

~~means for omitting new data indicator information from the new data indicator field for unscheduled HARQ processes from the downlink control information block.~~

~~33. The apparatus of claim 32, wherein the at least two fields further comprise a redundancy version index field, and decoding the downlink control information further comprises:~~

~~means for omitting redundancy version index information for unscheduled HARQ processes from the downlink control information block.~~

~~34. The apparatus of claim 32, wherein the HARQ process identifier field comprises a number of bits equal to a number of transport blocks scheduled by the downlink control information.~~

~~35. The apparatus of claim 32, wherein the new data indicator field comprises a number of bits equal to a number of transport blocks scheduled by the downlink control information.~~

~~36. The apparatus of claim 31, wherein the plurality of fields comprises a number of repetitions field configured to signal a number of repetitions per transport block of the plurality of transport blocks.~~

~~37. The apparatus of claim 36, wherein the at least two fields comprise the number of repetitions field and a redundancy version indicator field, and decoding the downlink control information further comprises:~~

~~means for setting a size of the redundancy version indicator field based at least in part on the number of repetitions per transport block signaled by the number of repetitions field.~~

~~38. The apparatus of claim 37, wherein the means for setting the size of the redundancy version indicator field further comprises~~

~~means for setting the size of the redundancy version indicator field to 0 bits if the number of repetitions per transport block is greater than or equal to 4, or setting the size of the redundancy version indicator field to 1 bit if the number of repetitions per transport block is equal to 2, or setting the size of the redundancy version indicator field to 2 bits if the number of repetitions per transport block is equal to 1.~~

~~39. The apparatus of claim 36, wherein the at least two fields comprise the number of repetitions field and a modulation and coding scheme indicator field, and decoding the downlink control information further comprises:~~

~~means for setting a size of the modulation and coding scheme indicator field based at least in part on one or more of: a number of repetitions per transport block signaled by the number of repetitions field or a channel condition.~~

~~40. The apparatus of claim 39, further comprising:~~

~~means for receiving from the base station a message indicating a restriction of values for the modulation and coding scheme indicator field based at least in part on the channel condition.~~

~~41. The apparatus of claim 39, wherein the modulation and coding scheme indicator field signals one or more of a modulation and coding scheme that is common to each transport block of the plurality of transport blocks or a bitmap separately indicating a modulation and coding scheme for each transport block of the plurality of transport blocks.~~

~~42. The apparatus of claim 41, further comprising:~~

~~means for receiving from the base station an indication of whether the modulation and coding scheme indicator is to signal the modulation and coding scheme that is common to each transport block of the plurality of transport blocks or the bitmap separately indicating the modulation and coding scheme for each transport block of the plurality of transport blocks.~~

43. The apparatus of claim 36, wherein the at least two fields comprise the number of repetitions field and a frequency hopping indicator field, and decoding the downlink control information further comprises:

means for omitting the frequency hopping indicator field if a number of repetitions per transport block signaled by the number of repetitions field is equal to 1.

44. The apparatus of claim 36, wherein the number of repetitions field comprises one or more of a number of repetitions that is common to each transport block of the plurality of transport blocks or a bitmap separately indicating a number of repetitions for each transport block of the plurality of transport blocks.

45. The apparatus of claim 44, further comprising:

means for receiving from the base station an indication of whether the number of repetitions field is to signal the number of repetitions that is common to each transport block of the plurality of transport blocks or the bitmap separately indicating the modulation and coding scheme for each transport block of the plurality of transport blocks.

46. An apparatus for wireless communications at a base station, comprising:

means for generating downlink control information to schedule a plurality of transport blocks for a user equipment (UE), the downlink control information comprising a plurality of fields;

means for encoding the downlink control information into a downlink control information block for the plurality of transport blocks, wherein at least two fields of the downlink control information are jointly encoded according to an encoding scheme, wherein each possible output of the encoding scheme corresponds to a jointly valid combination of the at least two fields;

means for transmitting the downlink control information block for the plurality of transport blocks to the UE; and

means for transmitting the plurality of transport blocks to the UE based at least in part on the downlink control information.

47. The apparatus of claim 46, wherein the at least two fields comprise a hybrid automatic repeat request (HARQ) process identifier field and a new data indicator field, and encoding the downlink control information further comprises:

means for omitting new data indicator information from the new data indicator field for unscheduled HARQ processes from the downlink control information block.

48. The apparatus of claim 47, wherein the at least two fields further comprise a redundancy version index field, and encoding the downlink control information further comprises:

means for omitting redundancy version index information for unscheduled HARQ processes from the downlink control information block.

49. The apparatus of claim 47, wherein the HARQ process identifier field comprises a number of bits equal to a number of transport blocks scheduled by the downlink control information.

50. The apparatus of claim 47, wherein the new data indicator field comprises a number of bits equal to a number of transport blocks scheduled by the downlink control information.

51. The apparatus of claim 46, wherein the plurality of fields comprises a number of repetitions field configured to signal a number of repetitions per transport block of the plurality of transport blocks.

52. The apparatus of claim 51, wherein the at least two fields comprise the number of repetitions field and a redundancy version indicator field, and encoding the downlink control information further comprises:

means for setting a size of the redundancy version indicator field based at least in part on the number of repetitions per transport block signaled by the number of repetitions field.

53. The apparatus of claim 52, wherein the means for setting the size of the redundancy version indicator field further comprises:

means for setting the size of the redundancy version indicator field to 0 bits if the number of repetitions per transport block is greater than or equal to 4, or setting the size

of the redundancy version indicator field to 1 bit if the number of repetitions per transport block is equal to 2, or setting the size of the redundancy version indicator field to 2 bits if the number of repetitions per transport block is equal to 1.

54. The apparatus of claim 51, wherein the at least two fields comprise the number of repetitions field and a modulation and coding scheme indicator field, and encoding the downlink control information further comprises:

means for setting a size of the modulation and coding scheme indicator field based at least in part on one or more of: a number of repetitions per transport block signaled by the number of repetitions field or a channel condition.

55. The apparatus of claim 54, further comprise:

means for transmitting to the UE a message indicating a restriction of values for the modulation and coding scheme indicator field based at least in part on the channel condition.

56. The apparatus of claim 54, wherein the modulation and coding scheme indicator field signals one or more of a modulation and coding scheme that is common to each transport block of the plurality of transport blocks or a bitmap separately indicating a modulation and coding scheme for each transport block of the plurality of transport blocks.

57. The apparatus of claim 56, further comprising:

means for transmitting to the UE an indication of whether the modulation and coding scheme indicator is to signal the modulation and coding scheme that is common to each transport block of the plurality of transport blocks or the bitmap separately indicating the modulation and coding scheme for each transport block of the plurality of transport blocks.

58. The apparatus of claim 51, wherein the at least two fields comprise the number of repetitions field and a frequency hopping indicator field, and encoding the downlink control information further comprises:

means for omitting the frequency hopping indicator field if a number of repetitions per transport block signaled by the number of repetitions field is equal to 1.

59. The apparatus of claim 51, wherein the number of repetitions field comprises one or more of: a number of repetitions that is common to each transport block of

~~the plurality of transport blocks or a bitmap separately indicating a number of repetitions for each transport block of the plurality of transport blocks.~~

~~60. The apparatus of claim 59, further comprising:~~

~~means for transmitting to the UE~~ an indication of whether the number of repetitions field is to signal the number of repetitions that is common to each transport block of the plurality of transport blocks or the bitmap separately indicating the modulation and coding scheme for each transport block of the plurality of transport blocks.