

CLAIMS

1. A method of wireless communication performed by a user equipment (UE), comprising: receiving, via a first physical downlink control channel (PDCCH), a first downlink control information (DCI) communication for scheduling a first physical downlink shared channel (PDSCH) associated with a first transmit receive point (TRP); receiving, via a second PDCCH, a second DCI communication for scheduling a second PDSCH associated with a second TRP, wherein the first PDCCH and the second PDCCH are configured for multi-TRP scheduling, and wherein the first DCI communication and the second DCI communication each indicate, in a transmission configuration indication (TCI) field, TCI states, wherein the TCI states indicate, for at least one of the first DCI communication or the second DCI communication, at least one of: a first quasi co-located (QCL) relationship associated with the first TRP, and a second QCL relationship associated with the second TRP, or a first demodulation reference signal (DMRS) port group associated with a first set of downlink transmission layers that is transmitted by the first TRP, and a second DMRS port group associated with a second set of downlink transmission layers that is transmitted by the second TRP; and receiving downlink communications based at least in part on the first DCI communication and the second DCI communication.
2. The method of claim 1, wherein the TCI states include two TCI states for one or both of the TCI fields in the first DCI and the second DCI; and wherein the TCI states indicated by the TCI fields of the first DCI and the second DCI are a same TCI state or different TCI states.
3. The method of claim 2, wherein the first PDSCH and the second PDSCH are non-overlapping, completely overlapping, or partially overlapping PDSCHs.
4. The method of claim 1, wherein the first DCI communication indicates, in a first TCI field included in the first DCI communication, a single TCI state associated with the first QCL relationship associated with the first TRP; wherein the second DCI communication schedules downlink transmission of the second PDSCH to the UE by the second TRP and the first TRP; and wherein the TCI states indicated in the second DCI communication indicate the first QCL relationship and the second QCL relationship.
5. The method of claim 1, wherein the TCI states indicate the first DMRS port group from a plurality of DMRS port groups.
6. The method of claim 5, wherein the first DMRS port group corresponds to a first TCI state of the TCI states; wherein a second DMRS port group, of the plurality of DMRS port groups, corresponds to a second TCI state of the TCI states; and wherein the first TCI state and the second TCI state are different TCI states.
7. The method of claim 1, wherein the first DCI communication and the second DCI communication each indicate: the first DMRS port group, and the second DMRS port group.
8. The method of claim 1, wherein the first DCI communication indicates: the first DMRS port group, and wherein the second DCI communication indicates: the second DMRS port group, and a third DMRS port group associated with a third set of downlink transmission layers that is transmitted by a third TRP.

9. The method of claim 1, wherein the first DCI communication indicates: the first DMRS port group, and the second DMRS port group; and wherein the second DCI communication indicates: a third DMRS port group associated with a third set of downlink transmission layers that is transmitted by the second TRP, and a fourth DMRS port group associated with a fourth set of downlink transmission layers that is transmitted by a fourth TRP.

10. The method of claim 1, wherein the first DCI communication indicates: the first DMRS port group, and the second DMRS port group; and wherein the second DCI communication indicates: the second DMRS port group, and a third DMRS port group associated with a third set of downlink transmission layers that is transmitted by a third TRP.

11. The method of claim 1, wherein the first DCI communication indicates: the first DMRS port group, and wherein the second DCI communication indicates: the first DMRS port group, and the second DMRS port group.

12. The method of claim 1, wherein receiving the second DCI communication comprises: simultaneously receiving, in a same slot, the second DCI communication with the first DCI communication.

13. The method of claim 1, wherein the multi-TRP scheduling is configured for mixing multiple multi-TRP scheduling modes.

14. A user equipment (UE) for wireless communication, comprising: a memory; and one or more processors coupled to the memory, the one or more processors configured to: receive, via a first physical downlink control channel (PDCCH), a first downlink control information (DCI) communication for scheduling a first physical downlink shared channel (PDSCH) associated with a first transmit receive point (TRP); receive, via a second PDCCH, a second DCI communication for scheduling a second PDSCH associated with a second TRP, wherein the first PDCCH and the second PDCCH are configured for multi-TRP scheduling, and wherein the first DCI communication and the second DCI communication each indicate, in a transmission configuration indication (TCI) field, a quantity of TCI states, wherein the TCI states indicate, for at least one of the first DCI communication or the second DCI communication, at least one of: a first quasi co-located (QCL) relationship associated with the first TRP, and a second QCL relationship associated with the second TRP, or a first demodulation reference signal (DMRS) port group associated with a first set of downlink transmission layers that is transmitted by the first TRP, and a second DMRS port group associated with a second set of downlink transmission layers that is transmitted by the second TRP; and receive downlink communications based at least in part on the first DCI communication and the second DCI communication.

15. The UE of claim 14, wherein the first DCI communication indicates, in a first TCI field included in the first DCI communication, a single TCI state associated with a QCL relationship associated with the first TRP; wherein the second DCI communication schedules downlink transmission of the second PDSCH to the UE by the second TRP and the first TRP; and wherein the TCI states indicated in second DCI communication indicates: the first QCL relationship, and the second QCL relationship.

16. The UE of claim 14, wherein of the TCI states indicate the first DMRS port group from a plurality of DMRS port groups.

17. The UE of claim 14, wherein the first DCI communication and the second DCI communication each indicate: the first DMRS port group, and the second DMRS port group.

18. The UE of claim 14, wherein the first DCI communication indicates: the first DMRS port group, and the second DMRS port group; and wherein the second DCI communication indicates: the second DMRS port group, and a third DMRS port group.

19. The UE of claim 14, wherein the one or more processors, when receiving the second DCI communication, are to: simultaneously receive, in a same slot, the second DCI communication with the first DCI communication.

20. The UE of claim 14, wherein the multi-TRP scheduling is configured for mixing multiple multi-TRP scheduling modes.

21. A non-transitory computer-readable medium storing one or more instructions for wireless communication, the one or more instructions comprising: one or more instructions that, when executed by one or more processors of a user equipment (UE), cause the one or more processors to: receive, via a first physical downlink control channel (PDCCH), a first downlink control information (DCI) communication for scheduling a first physical downlink shared channel (PDSCH) associated with a first transmit receive point (TRP); receive, via a second PDCCH, a second DCI communication for scheduling a second PDSCH associated with a second TRP, wherein the first PDCCH and the second PDCCH are configured for multi-TRP scheduling, and wherein the first DCI communication and the second DCI communication each indicate, in a transmission configuration indication (TCI) field, TCI states, wherein the TCI states indicate, for at least one of the first DCI communication or the second DCI communication, at least one of: a first quasi co-located (QCL) relationship associated with the first TRP, and a second QCL relationship associated with the second TRP, or a first demodulation reference signal (DMRS) port group associated with a first set of downlink transmission layers that is transmitted by the first TRP, and a second DMRS port group associated with a second set of downlink transmission layers that is transmitted by the second TRP; and receive downlink communications based at least in part on the first DCI communication and the second DCI communication.

22. The non-transitory computer-readable medium of claim 21, wherein the first DCI communication indicates, in a first TCI field included in the first DCI communication, a single TCI state associated with the first QCL relationship associated with the first TRP; wherein the second DCI communication schedules downlink transmission of the second PDSCH to the UE by the second TRP and the first TRP; and wherein the TCI states indicated in the second DCI communication indicate the first QCL relationship and the second QCL relationship.

23. The non-transitory computer-readable medium of claim 21, wherein the TCI states indicate the first DMRS port group from a plurality of DMRS port groups.

24. The non-transitory computer-readable medium of claim 21, wherein the one or more instructions, that cause the one or more processors to receive the second DCI communication, cause the one or more processors to: simultaneously receive, in a same slot, the second DCI communication with the first DCI communication.

25. The non-transitory computer-readable medium of claim 21, wherein the multi-TRP scheduling is configured for mixing multiple multi-TRP scheduling modes.

26. An apparatus for wireless communication, comprising: means for receiving, via a first physical downlink control channel (PDCCH), a first downlink control information (DCI) communication for scheduling a first physical downlink shared channel (PDSCH) associated with a first transmit receive point (TRP); means for receiving, via a second PDCCH, a second DCI communication for scheduling a second PDSCH associated with a second TRP, wherein the first PDCCH and the second PDCCH are configured for multi-TRP scheduling, and wherein the first DCI communication and the second DCI communication each indicate, in a transmission configuration indication (TCI) field, TCI states, wherein the TCI states indicate, for at least one of the first DCI communication or the second DCI communication, at least one of: a first quasi co-located (QCL) relationship associated with the first TRP, and a second QCL relationship associated with the second TRP, or a first demodulation reference signal (DMRS) port group associated with a first set of downlink transmission layers that is transmitted by the first TRP, and a second DMRS port group associated with a second set of downlink transmission layers that is transmitted by the second TRP; and means for receiving downlink communications based at least in part on the first DCI communication and the second DCI communication.

27. The apparatus of claim 26, wherein the first DCI communication indicates, in a first TCI field included in the first DCI communication, a single TCI state associated with the first QCL relationship associated with the first TRP; wherein the second DCI communication schedules downlink transmission of the second PDSCH to the apparatus by the second TRP and the first TRP; and wherein the TCI states indicated in second DCI communication indicate: the first QCL relationship, and the second QCL relationship.

28. The apparatus of claim 26, wherein the TCI states indicate the first DMRS port group from a plurality of DMRS port groups.

29. The apparatus of claim 26, wherein the first DCI communication indicates: the first DMRS port group, and the second DMRS port group; and wherein the second DCI communication indicates: the second DMRS port group, and a third DMRS port group.

30. The apparatus of claim 26, wherein the means for receiving the second DCI communication comprises: means for simultaneously receiving, in a same slot, the second DCI communication with the first DCI communication.