

CLAIMS

What is claimed is:

CLAIMS

1. A method for wireless communication at a user equipment (UE), comprising:
 - determining, based at least in part on physical uplink control channel (PUCCH) communication resources allocated to the UE by a ~~base station~~ network device, a default transmit beam for communicating via a physical uplink shared channel (PUSCH) with the ~~base station~~ network device, wherein determining the default transmit beam comprises:
 - receiving a semi-static configuration or a dynamic configuration for the allocated PUCCH communication resources, wherein the allocated PUCCH communication resources are designated for carrying a first uplink transmission to the network device using a first uplink transmit beam, wherein the first uplink transmission comprises a PUCCH transmission and the allocated PUCCH communication resources comprise a PUCCH resource;
 - identifying the PUCCH resource from a plurality of PUCCH resources based at least in part on the identified PUCCH resource having a lowest index of the plurality of PUCCH resources; and
 - determining the default transmit beam based at least in part on the first uplink transmit beam being carried on the identified PUCCH resource having the lowest index;
 - identifying a triggering condition for using the default transmit beam; and
 - transmitting, via the PUSCH, an uplink communication to the ~~base station~~ network device using the default transmit beam based at least in part on the triggering condition.

2. The method of claim 1, wherein identifying the triggering condition comprises:
 - receiving, from the ~~base station~~ network device, an uplink grant that does not contain a ~~physical uplink shared channel (PUSCH)~~ beam indicator.

3. The method of claim 2, wherein the PUSCH beam indicator comprises a sounding reference signal (SRS) resource indicator (SRI) or a transmission configuration indicator (TCI).

4. The method of claim 1, wherein ~~determining the default transmit beam comprises:~~ the PUCCH resource is identified based at least in part on an intended use of the PUCCH resource.

~~receiving a semi-static configuration or a dynamic configuration for the allocated communication resources, wherein the allocated communication resources are designated for carrying a first uplink transmission to the base station using a first uplink transmit beam; and~~

~~determining the default transmit beam based at least in part on the first uplink transmit beam.~~

5. ~~The method of claim 4, wherein the first uplink transmission comprises a physical uplink control channel (PUCCH) transmission and the allocated communication resources comprise a PUCCH resource.~~

6. ~~The method of claim 5, further comprising:~~
~~identifying the PUCCH resource from a plurality of candidate PUCCH resources based at least in part on an index associated with the PUCCH resource, an intended use of the PUCCH resource, or a combination thereof.~~

~~7. The method of claim 6, wherein the identifying the PUCCH resource from the plurality of candidate PUCCH resources comprises identifying the PUCCH resource based at least in part on the identified PUCCH resource with a lowest index.~~

8. ~~The method of claim 65.~~ The method of claim 4, wherein the intended use of the PUCCH resource comprises one of a scheduling request (SR), a channel quality indicator (CQI) report, or a beam failure recovery.

96. The method of claim 41, wherein the first uplink transmission comprises a sounding reference signal (SRS) transmission, a ~~physical uplink shared channel (PUSCH)~~ transmission scheduled by an uplink grant that includes a PUSCH beam indicator, a semi-persistent scheduled (SPS) transmission, or a grant-free uplink transmission.

~~140~~7. The method of claim ~~41~~1, further comprising:

identifying the first uplink transmission to be used for determining the default transmit beam from a plurality of candidate uplink transmissions based at least in part on a scheduling parameter of the first uplink transmission, a number of beams associated with the first uplink transmission, a selection indication received from the ~~base station~~network device, or a combination thereof.

~~141~~8. The method of claim 1, wherein identifying the triggering condition comprises:

identifying uplink data to be transmitted to the ~~base station~~network device in the uplink communication; and

determining that the ~~base station~~network device has not transmitted a sounding reference signal (SRS) resource indicator (SRI) indicating a configured uplink transmit beam for the uplink communication.

~~142~~9. The method of claim 1, wherein identifying the ~~trigger~~triggering condition comprises:

identifying a threshold time period preceding the uplink communication; and

determining that the ~~base station~~network device has not transmitted a ~~physical uplink shared channel (PUSCH)~~physical uplink shared channel (PUSCH) beam indicator indicating a configured uplink transmit beam for the uplink communication prior to the threshold time period.

~~143~~10. The method of claim ~~129~~9, wherein the threshold time period is based at least in part on a beam-switching capability of the UE.

~~144~~11. The method of claim 1, wherein determining the default transmit beam comprises:

identifying a receive beam used to receive a remaining minimum system information (RMSI) control resource set, wherein the RMSI control resource set comprises the allocated PUCCH communication resources; and

selecting, prior to a completion of a radio resource control (RRC) configuration, the default transmit beam based at least in part on the receive beam.

~~15~~12. The method of claim 1, wherein determining the default transmit beam comprises:

receiving a downlink transmission from the ~~base station~~network device over the allocated PUCCH communication resources using a downlink receive beam of one or more downlink receive beams; and

determining the default transmit beam based at least in part on the downlink receive beam.

~~16~~13. The method of claim ~~15~~12, wherein the downlink transmission comprises a physical downlink control channel (PDCCH) transmission and the allocated PUCCH communication resources comprise a PDCCH control resource set.

~~17~~14. The method of claim ~~16~~13, further comprising:

identifying the PDCCH control resource set from a plurality of candidate PDCCH control resource sets based at least in part on an index associated with the PDCCH control resource set.

~~18~~15. The method of claim ~~16~~13, further comprising:

identifying the PDCCH control resource set from a plurality of candidate PDCCH control resource sets based at least in part on a reception time at the UE associated with the PDCCH control resource set.

~~19~~16. The method of claim ~~18~~15, further comprising:

selecting, based at least in part on an index associated with the PDCCH control resource set, the PDCCH control resource set from the plurality of candidate PDCCH control resource sets, wherein the plurality of candidate PDCCH control resource sets are associated with a same reception time at the UE.

~~20~~17. The method of claim ~~15~~12, wherein receiving the downlink transmission comprises:

receiving one or more channel state information reference signals (CSI-RS) over the allocated PUCCH communication resources, wherein each CSI-RS is received using a respective downlink receive beam of the one or more downlink receive beams;

identifying a given downlink receive beam of the one or more downlink receive beams; and

determining the default transmit beam based at least in part on the given downlink receive beam.

~~2418~~. The method of claim ~~1512~~, wherein the downlink transmission comprises a physical downlink shared channel (PDSCH) transmission.

~~2219~~. The method of claim ~~1512~~, further comprising:
identifying the downlink transmission to be used for determining the default transmit beam from a plurality of candidate downlink transmissions based at least in part on a scheduling parameter of the downlink transmission, a number of beams associated with the downlink transmission, a selection indication received from the ~~base station~~network device, or a combination thereof.

~~2320~~. The method of claim 1, wherein determining the default transmit beam comprises:

identifying a communication beam corresponding to a recent transmission, the recent transmission comprising a recent uplink transmission or a recent downlink transmission; and

determining the default transmit beam based at least in part on the communication beam.

~~2421~~. The method of claim 1, wherein transmitting the uplink communication using the default transmit beam comprises:

receiving, from the ~~base station~~network device, an update to the allocated PUCCH communication resources; and

determining a second default transmit beam based at least in part on the update, wherein the uplink ~~transmission~~communication is transmitted using the second default transmit beam.

~~2522~~. A method for wireless communication at a ~~base station~~network device, comprising:

~~allocating communication resources for a user equipment (UE);~~

allocating physical uplink control channel (PUCCH) communication resources for a user equipment (UE), wherein allocating the PUCCH communication resources for the UE comprises transmitting a semi-static configuration or a dynamic configuration allocating

the PUCCH communication resources, which are designated for carrying a first uplink transmission from the UE to the network device using a first uplink transmit beam;

identifying a PUCCH resource from a plurality of candidate PUCCH resources based at least in part on the identified PUCCH resource having a lowest index of the plurality of candidate PUCCH resources, wherein the first uplink transmission comprises a PUCCH transmission and the allocated PUCCH communication resources comprise the identified PUCCH resource;

identifying a triggering condition that indicates to the UE to use a default transmit beam for communicating via a physical uplink shared channel (PUSCH) with the ~~base station~~network device, wherein the default transmit beam is based at least in part on the allocated PUCCH communication resources; and

receiving, based at least in part on the triggering condition, an uplink communication from the UE via the PUSCH, wherein the uplink communication is transmitted by the UE using the default transmit beam, wherein the uplink communication is transmitted by the UE using the default transmit beam based at least in part on the first uplink transmit beam being carried on the identified PUCCH resource having the lowest index.

2623. The method of claim 2522, wherein identifying the triggering condition comprises:

transmitting, to the UE, an uplink grant that does not contain a ~~physical uplink shared channel (PUSCH)~~ beam indicator.

2724. The method of claim 2623, wherein the PUSCH beam indicator comprises a sounding reference signal (SRS) resource indicator (SRI) or a transmission configuration indicator (TCI).

2825. The method of claim 2522, wherein ~~allocating the communication resources for the UE comprises:~~

~~transmitting a semi-static configuration or a dynamic configuration allocating the communication resources, which are designated for carrying a first uplink transmission from the UE to the base station using a first uplink transmit beam, wherein the uplink communication is transmitted by the UE using the default transmit beam based at least in part on the first uplink transmit beam.~~

~~29. The method of claim 28, wherein the first uplink transmission comprises a physical uplink control channel (PUCCH) transmission and the allocated communication resources comprise a PUCCH resource.~~

~~30. The method of claim 29, further comprising:~~

~~identifying the PUCCH resource from a plurality of candidate PUCCH resources; is identified based at least in part on an index associated with the PUCCH resource, an intended use of the PUCCH resource, or a combination thereof.~~

~~31. The method of claim 30, wherein the identifying the PUCCH resource from the plurality of candidate PUCCH resources comprises identifying the PUCCH resource based at least in part on the identified PUCCH resource with a lowest index.~~

~~32. The method of claim 30~~26. The method of claim 25, wherein the intended use of the PUCCH resource comprises one of a scheduling request (SR), a channel quality indicator (CQI) report, or a beam failure recovery.

~~33~~27. The method of claim ~~28~~22, wherein the first uplink transmission comprises a sounding reference signal (SRS) transmission, a ~~physical uplink shared channel (PUSCH) transmission~~ scheduled by an uplink grant that includes a ~~physical uplink shared channel (PUSCH) beam indicator~~, a semi-persistent scheduled (SPS) transmission, or a grant-free uplink transmission.

~~34~~28. The method of claim ~~28~~22, further comprising:

~~identifying the first uplink transmission to be used by the UE for determining the default transmit beam from a plurality of candidate uplink transmissions based at least in part on a scheduling parameter of the first uplink transmission, a number of beams associated with the first uplink transmission, a selection indication transmitted by the base station~~network device, or a combination thereof.

~~35~~29. The method of claim ~~25~~22, wherein allocating the PUCCH communication resources for the UE comprises:

configuring, for the UE, a remaining minimum system information (RMSI) control resource set; and

identifying, prior to a completion of a radio resource control (RRC) configuration, the default transmit beam based at least in part on the RMSI control resource set.

~~36~~30. The method of claim ~~25~~22, further comprising:

transmitting a downlink transmission to the UE over the allocated PUCCH communication resources, wherein the uplink communication is transmitted by the UE using the default transmit beam based at least in part on the downlink transmission.

~~37~~31. The method of claim ~~36~~30, wherein the downlink transmission

comprises a physical downlink control channel (PDCCH) transmission and the allocated PUCCH communication resources comprise a PDCCH control resource set.

~~38~~32. The method of claim ~~37~~31, further comprising:

identifying the PDCCH control resource set from a plurality of candidate PDCCH control resource sets based at least in part on an index associated with the PDCCH control resource set.

~~39~~33. The method of claim ~~36~~30, wherein transmitting the downlink

transmission comprises:

transmitting one or more channel state information reference signals (CSI-RS) over the allocated PUCCH communication resources, wherein the uplink communication is transmitted by the UE using the default transmit beam based at least in part on the one or more CSI-RS.

~~40~~34. The method of claim ~~36~~30, wherein the downlink transmission

comprises a physical downlink shared channel (PDSCH) transmission.

~~41~~35. The method of claim ~~36~~30, further comprising:

identifying the downlink transmission to be used by the UE for determining the default transmit beam from a plurality of candidate downlink transmissions based at least in part on a scheduling parameter of the downlink transmission, a number of beams associated with the downlink transmission, a selection indication received from the ~~base station~~ network device, or a combination thereof.

4236. The method of claim 2522, further comprising:

identifying a communication beam corresponding to a recent transmission, the recent transmission comprising a recent uplink transmission from the UE or a recent downlink transmission to the UE, wherein the uplink communication is transmitted by the UE using the default transmit beam based at least in part on the communication beam.

4337. The method of claim 2522, further comprising:

transmitting, to the UE, an update to the allocated PUCCH communication resources, wherein the uplink communication is transmitted by the UE on the default transmit beam based at least in part on the update.

4438. An apparatus for wireless communications, comprising:

~~means for determining~~ a processor,

memory coupled with the processor; and

instructions stored in the memory and executable by the processor, to cause

the apparatus to:

determine, based at least in part on physical uplink control channel (PUCCH) communication resources allocated by a base station network device, a default transmit beam for communicating with the base station; via a physical uplink shared channel (PUSCH) with the network device, wherein the instructions to determine the default transmit beam are executable by the processor to cause the apparatus to:

~~means~~receive a semi-static configuration or a dynamic configuration for the allocated PUCCH communication resources, wherein the allocated PUCCH communication resources are designated for identifying carrying a first uplink transmission to the network device using a first uplink transmit beam, wherein the first uplink transmission comprises a PUCCH transmission and the allocated PUCCH communication resources comprise a PUCCH resource;

identify the PUCCH resource from a plurality of PUCCH resources based at least in part on the identified PUCCH resource having a lowest index of the plurality of PUCCH resources; and

determine the default transmit beam based at least in part on the first uplink transmit beam being carried on the identified PUCCH resource having the lowest index;

identify a triggering condition for using the default transmit beam; and
~~means for transmitting~~transmit, via the PUSCH, an uplink
communication to the ~~base station~~network device using the default transmit beam based at least in part on the triggering condition.

4539. The apparatus of claim 4438, wherein the ~~means for~~
~~identifying~~instructions to identify the triggering condition ~~further comprises~~are executable by
the processor to cause the apparatus to:

~~means for receiving~~receive, from the base station~~network device,~~ an uplink grant that does not contain a ~~physical uplink shared channel (PUSCH)~~ beam indicator.

4640. The apparatus of claim 4539, wherein the PUSCH beam indicator comprises a sounding reference signal (SRS) resource indicator (SRI) or a transmission configuration indicator (TCI).

4741. The apparatus of claim 4438, wherein the ~~means for determining the default transmit beam further comprises:~~

~~means for receiving a semi-static configuration or a dynamic configuration for the allocated communication resources, wherein the allocated communication resources are designated for carrying a first uplink transmission to the base station using a first uplink transmit beam; and~~

~~means for determining the default transmit beam based at least in part on the first uplink transmit beam.~~

48.—The apparatus of claim 47, wherein the first uplink transmission comprises a physical uplink control channel (PUCCH) transmission and the allocated communication resources comprise a PUCCH resource.

49.—The apparatus of claim 48, further comprising:

~~means for identifying the PUCCH resource from a plurality of candidate PUCCH resources~~ is identified based at least in part on an ~~index associated with the PUCCH resource, an intended use of the PUCCH resource, or a combination thereof.~~

~~50. The apparatus of claim 49, wherein the identifying the PUCCH resource from the plurality of candidate PUCCH resources comprises identifying the PUCCH resource based at least in part on the identified PUCCH resource with a lowest index.~~

~~51. The apparatus of claim 49~~42. The apparatus of claim 41, wherein the intended use of the PUCCH resource comprises one of a scheduling request (SR), a channel quality indicator (CQI) report, or a beam failure recovery.

~~52~~43. The apparatus of claim ~~47~~38, wherein the first uplink transmission comprises a sounding reference signal (SRS) transmission, a ~~physical uplink shared channel (PUSCH)~~ transmission scheduled by an uplink grant that includes a PUSCH beam indicator, a semi-persistent scheduled (SPS) transmission, or a grant-free uplink transmission.

~~53~~44. The apparatus of claim ~~47~~38, wherein the instructions are further comprising executable by the processor to cause the apparatus to:

~~means for identifying~~identify the first uplink transmission to be used for determining the default transmit beam from a plurality of candidate uplink transmissions based at least in part on a scheduling parameter of the first uplink transmission, a number of beams associated with the first uplink transmission, a selection indication received from the ~~base station~~network device, or a combination thereof.

~~54~~45. The apparatus of claim ~~44~~38, wherein the ~~means for identifying~~instructions to identify the triggering condition ~~further comprises~~are executable by the processor to cause the apparatus to:

~~means for identifying~~identify uplink data to be transmitted to the ~~base station~~network device in the uplink communication; and

~~means for determining~~determine that the ~~base station~~network device has not transmitted a sounding reference signal (SRS) resource indicator (SRI) indicating a configured uplink transmit beam for the uplink communication.

~~55~~46. The apparatus of claim ~~44~~38, wherein the ~~means for identifying~~instructions to identify the ~~trigger~~triggering condition ~~further comprises~~are executable by the processor to cause the apparatus to:

~~means for identifying~~identify a threshold time period preceding the uplink communication; and

~~means for determining~~determine that the ~~base station~~network device has not transmitted a ~~physical uplink shared channel (PUSCH)~~ beam indicator indicating a configured uplink transmit beam for the uplink communication prior to the threshold time period.

5647. The apparatus of claim 5546, wherein the threshold time period is based at least in part on a beam-switching capability of the ~~UE~~apparatus.

5748. The apparatus of claim 4438, wherein the ~~means for determining~~instructions to determine the default transmit beam ~~further comprises~~are executable by the processor to cause the apparatus to:

~~means for identifying~~identify a receive beam used to receive a remaining minimum system information (RMSI) control resource set, wherein the RMSI control resource set comprises the allocated PUCCH communication resources; and

~~means for selecting~~select, prior to a completion of a radio resource control (RRC) configuration, the default transmit beam based at least in part on the receive beam.

5849. The apparatus of claim 4438, wherein the ~~means for determining~~instructions to determine the default transmit beam ~~further comprises~~are executable by the processor to cause the apparatus to:

~~means for receiving~~receive a downlink transmission from the ~~base station~~network device over the allocated PUCCH communication resources using a downlink receive beam of one or more downlink receive beams; and

~~means for determining~~determine the default transmit beam based at least in part on the downlink receive beam.

5950. The apparatus of claim 5849, wherein the downlink transmission comprises a physical downlink control channel (PDCCH) transmission and the allocated PUCCH communication resources comprise a PDCCH control resource set.

6051. The apparatus of claim 59, ~~further comprising~~50, wherein the instructions are further executable by the processor to cause the apparatus to:

~~means for identifying~~identify the PDCCH control resource set from a plurality of candidate PDCCH control resource sets based at least in part on an index associated with the PDCCH control resource set.

~~61~~52. The apparatus of claim ~~59~~50, wherein the instructions are further comprising executable by the processor to cause the apparatus to:

~~means for identifying~~identify the PDCCH control resource set from a plurality of candidate PDCCH control resource sets based at least in part on a reception time at the ~~UE~~apparatus associated with the PDCCH control resource set.

~~62~~53. The apparatus of claim ~~61~~52, wherein the instructions are further comprising executable by the processor to cause the apparatus to:

~~means for selecting~~select, based at least in part on an index associated with the PDCCH control resource set, the PDCCH control resource set from the plurality of candidate PDCCH control resource sets, wherein the plurality of candidate PDCCH control resource sets are associated with a same reception time at the ~~UE~~apparatus.

~~63~~54. The apparatus of claim ~~58~~49, wherein the ~~means for receiving instructions to receive~~the downlink transmission further comprises are executable by the processor to cause the apparatus to:

~~means for receiving~~receive one or more channel state information reference signals (CSI-RS) over the allocated PUCCH communication resources, wherein each CSI-RS is received using a respective downlink receive beam of the one or more downlink receive beams;

~~means for identifying~~identify a given downlink receive beam of the one or more downlink receive beams; and

~~means for determining~~determine the default transmit beam based at least in part on the given downlink receive beam.

~~64~~55. The apparatus of claim ~~58~~49, wherein the downlink transmission comprises a physical downlink shared channel (PDSCH) transmission.

~~65~~56. The apparatus of claim ~~58~~49, wherein the instructions are further comprising executable by the processor to cause the apparatus to:

~~means for identifying~~identify the downlink transmission to be used for determining the default transmit beam from a plurality of candidate downlink transmissions based at least in part on a scheduling parameter of the downlink transmission, a number of beams associated with the downlink transmission, a selection indication received from the ~~base station~~network device, or a combination thereof.

6657. The apparatus of claim 4438, wherein the ~~means for determining~~instructions to determine the default transmit beam ~~further comprises~~are executable by the processor to cause the apparatus to:

~~means for identifying~~identify a communication beam corresponding to a recent transmission, the recent transmission comprising a recent uplink transmission or a recent downlink transmission; and

~~means for determining~~determine the default transmit beam based at least in part on the communication beam.

6758. The apparatus of claim 4438, wherein the ~~means for transmitting~~instructions to transmit the uplink communication using the default transmit beam ~~further comprises~~are executable by the processor to cause the apparatus to:

~~means for receiving~~receive, from the ~~base station~~network device, an update to the allocated PUCCH communication resources; and

~~means for determining~~determine a second default transmit beam based at least in part on the update, wherein the uplink ~~transmission~~communication is transmitted using the second default transmit beam.

6859. An apparatus for wireless communications at a network device, comprising:

~~means for allocating communication resources for a user equipment (UE);~~

~~means for identifying~~a processor, memory coupled with the processor; and

instructions stored in the memory and executable by the processor, to cause the apparatus to:

allocate physical uplink control channel (PUCCH) communication resources for a user equipment (UE), wherein allocating the PUCCH communication resources for the UE comprises transmitting a semi-static configuration or a dynamic configuration allocating the PUCCH communication resources, which are designated for carrying a first uplink transmission from the UE to the network device using a first uplink transmit beam;

identify a PUCCH resource from a plurality of candidate PUCCH resources based at least in part on the identified PUCCH resource having a lowest index of the plurality of candidate PUCCH resources, wherein the first uplink

transmission comprises a PUCCH transmission and the allocated PUCCH communication resources comprise the identified PUCCH resource;

identify a triggering condition that indicates to the UE to use a default transmit beam for communicating with the base station via a physical uplink shared channel (PUSCH) with the network device, wherein the default transmit beam is based at least in part on the allocated PUCCH communication resources; and

~~means for receiving~~receive, based at least in part on the triggering condition, an uplink communication from the UE via the PUSCH, wherein the uplink communication is transmitted by the UE using the default transmit beam; and

wherein the uplink communication is transmitted by the UE using the default transmit beam based at least in part on the first uplink transmit beam being carried on the identified PUCCH resource having the lowest index.

6960. The apparatus of claim 6859, wherein the ~~means for identifying~~instructions to identify the triggering condition ~~further comprises~~are executable by the processor to cause the apparatus to:

~~means for transmitting~~transmit, to the UE, an uplink grant that does not contain a ~~physical uplink shared channel (PUSCH)~~ beam indicator.

7061. The apparatus of claim 6960, wherein the PUSCH beam indicator comprises a sounding reference signal (SRS) resource indicator (SRI) or a transmission configuration indicator (TCI).

7162. The apparatus of claim 6859, wherein the ~~means for allocating the communication resources for the UE further comprises:~~

~~means for transmitting a semi-static configuration or a dynamic configuration allocating the communication resources, which are designated for carrying a first uplink transmission from the UE to the base station using a first uplink transmit beam, wherein the uplink communication is transmitted by the UE using the default transmit beam based at least in part on the first uplink transmit beam.~~

72.—The apparatus of claim 71, wherein the first uplink transmission comprises a physical uplink control channel (PUCCH) transmission and the allocated communication resources comprise a PUCCH resource.

73.—The apparatus of claim 72, further comprising:

~~means for identifying the PUCCH resource from a plurality of candidate PUCCH resources~~ is identified based at least in part on an ~~index associated with the PUCCH resource, an intended use of the PUCCH resource, or a combination thereof.~~

~~74. The apparatus of claim 73, wherein the identifying the PUCCH resource from the plurality of candidate PUCCH resources comprises identifying the PUCCH resource based at least in part on the identified PUCCH resource with a lowest index.~~

~~75. The apparatus of claim 73~~63. The apparatus of claim 62, wherein the intended use of the PUCCH resource comprises one of a scheduling request (SR), a channel quality indicator (CQI) report, or a beam failure recovery.

~~76~~64. The apparatus of claim 7459, wherein the first uplink transmission comprises a sounding reference signal (SRS) transmission, a ~~physical uplink shared channel (PUSCH) transmission~~ scheduled by an uplink grant that includes a ~~physical uplink shared channel (PUSCH) beam indicator~~, a semi-persistent scheduled (SPS) transmission, or a grant-free uplink transmission.

~~77~~65. The apparatus of claim 7459, wherein the instructions are further ~~comprising~~executable by the processor to cause the apparatus to:

~~means for identifying~~identify the first uplink transmission to be used by the UE for determining the default transmit beam from a plurality of candidate uplink transmissions based at least in part on a scheduling parameter of the first uplink transmission, a number of beams associated with the first uplink transmission, a selection indication transmitted by the ~~base station~~network device, or a combination thereof.

~~78~~66. The apparatus of claim 6559, wherein the ~~means for allocating~~instructions to allocate the PUCCH communication resources for the UE ~~further comprises~~are executable by the processor to cause the apparatus to:

~~means for configuring~~configure, for the UE, a remaining minimum system information (RMSI) control resource set; and

~~means for identifying~~identify, prior to a completion of a radio resource control (RRC) configuration, the default transmit beam based at least in part on the RMSI control resource set.

~~7967.~~ The apparatus of claim ~~68,59~~, wherein the instructions are further comprising executable by the processor to cause the apparatus to:

~~means for transmitting~~ transmit a downlink transmission to the UE over the allocated PUCCH communication resources, wherein the uplink communication is transmitted by the UE using the default transmit beam based at least in part on the downlink transmission.

~~8068.~~ The apparatus of claim ~~7967~~, wherein the downlink transmission comprises a physical downlink control channel (PDCCH) transmission and the allocated PUCCH communication resources comprise a PDCCH control resource set.

~~8169.~~ The apparatus of claim ~~80,68~~, wherein the instructions are further comprising executable by the processor to cause the apparatus to:

~~means for identifying~~ identify the PDCCH control resource set from a plurality of candidate PDCCH control resource sets based at least in part on an index associated with the PDCCH control resource set.

~~8270.~~ The apparatus of claim ~~7967~~, wherein the ~~means for transmitting~~ instructions to transmit the downlink transmission further comprises are executable by the processor to cause the apparatus to:

~~means for transmitting~~ transmit one or more channel state information reference signals (CSI-RS) over the allocated PUCCH communication resources, wherein the uplink communication is transmitted by the UE using the default transmit beam based at least in part on the one or more CSI-RS.

~~8371.~~ The apparatus of claim ~~7967~~, wherein the downlink transmission comprises a physical downlink shared channel (PDSCH) transmission.

~~8472.~~ The apparatus of claim ~~79,67~~, wherein the instructions are further comprising executable by the processor to cause the apparatus to:

~~means for identifying~~ identify the downlink transmission to be used by the UE for determining the default transmit beam from a plurality of candidate downlink transmissions based at least in part on a scheduling parameter of the downlink transmission, a number of beams associated with the downlink transmission, a selection indication received from the ~~base station~~ network device, or a combination thereof.

~~8573.~~ The apparatus of claim ~~68,59~~, wherein the instructions are further ~~comprising~~ executable by the processor to cause the apparatus to:

~~means for identifying~~ identify a communication beam corresponding to a recent transmission, the recent transmission comprising a recent uplink transmission from the UE or a recent downlink transmission to the UE, wherein the uplink communication is transmitted by the UE using the default transmit beam based at least in part on the communication beam.

~~8674.~~ The apparatus of claim ~~68,59~~, wherein the instructions are further ~~comprising~~ executable by the processor to cause the apparatus to:

~~means for transmitting~~ transmit, to the UE, an update to the allocated PUCCH communication resources, wherein the uplink communication is transmitted by the UE on the default transmit beam based at least in part on the update.