

CLAIMS

1. An apparatus for wireless communication, comprising:
a memory; and
a processor operably coupled to the memory, wherein the processor is configured to:
receive, at a mobile station, a channel state information reference signal (CSI-RS) in a downlink (DL) common burst of an uplink (UL) centric subframe;
estimate a channel between a base station and the mobile station using the received CSI-RS;
generate channel state feedback (CSF) information based on the estimated channel; and
transmit the CSF to the base station.
2. The apparatus of claim 1, wherein the DL common burst comprises symbols that contain DL control information.
3. The apparatus of claim 1, wherein the processor is configured to transmit the CSF information at the base station in a UL data burst or a UL common burst of the subframe.
4. The method of claim 3, wherein the UL common burst comprises symbols that contain UL control information.
5. The method of claim 1, wherein the processor is configured to transmit uplink data (UL) in a UL data burst of the UL centric subframe, wherein the DL common burst and the UL data burst are separated by a gap to provide the base station and the mobile station time to transition from DL to UL.
6. The apparatus of claim 1, wherein the processor is configured to transmit the CSF information in an uplink (UL) common burst or a UL data burst of a subsequent subframe.
7. The apparatus of claim 1, wherein the DL common burst includes a control region including one or more of the following: a UL grant, and resources in the UL data burst for transmitting UL data.

8. An apparatus for wireless communication, comprising:
a memory; and
a processor operably coupled to the memory, wherein the processor is configured to:
transmit, at a base station, a channel state information reference signal (CSI-RS) in a downlink (DL) common burst of an uplink (UL) centric subframe; and
receive, from a mobile station, channel state feedback (CSF) information in response to the CS-RS, wherein the CSF is generated at the mobile station using the CSI-RS.
9. The apparatus of claim 8, wherein the DL common burst comprises symbols that contain DL control information.
10. The apparatus of claim 8, wherein the processor is configured to receive the CSF information at the base station in a UL data burst or a UL common burst of the subframe.
11. The apparatus of claim 10, wherein the UL common burst comprises symbols that contain UL control information.
12. The apparatus of claim 8, further the processor is configured to receive uplink data (UL) in a UL data burst of the UL centric subframe, wherein the DL common burst and the UL data burst are separated by a gap to provide the base station and the mobile station time to transition from DL to UL.
13. The apparatus of claim 8, wherein processor is configured to receive the CSF information at the base station in an uplink (UL) common burst or a UL data burst of a subsequent subframe.
14. The apparatus of claim 8, wherein the DL common burst includes a control region including one or more of the following: a UL grant, and resources in the UL data burst for transmitting UL data.
15. The apparatus of claim 8, wherein the processor is configured to:
transmit a measurement reference signal (M-RS) in the DL common burst of the subframe; and

receive a signal strength or signal quality measured at the mobile station using the M-RS.

16. The apparatus of claim 8, wherein the processor is configured to transmit, to the mobile station, a demodulation reference signal and DL data in the DL common burst of the subframe.

17. An apparatus for wireless communication, comprising:
a memory; and
a processor operably coupled to the memory, wherein the processor is configured to:
receive, at a mobile station, a channel state information reference signal (CSI-RS) in a downlink (DL) common burst of a DL centric subframe;
estimate a channel between a base station and the mobile station using the received CSI-RS;
generate channel state feedback (CSF) information based on the estimated channel; and
transmit the CSF information to the base station.

18. The apparatus of claim 17, wherein the DL common burst comprises symbols that contain DL control information.

19. The apparatus of claim 17, wherein the processor is configured to transmit the CSF information to the base station in an uplink (UL) common burst of the subframe.

20. The apparatus of claim 19, wherein the UL common burst and a DL data burst of the subframe are separated by a gap to provide the base station and the mobile station time to transition from DL to UL.

21. The apparatus of claim 17, wherein the processor is configured to transmit the CSF information to the base station in an uplink (UL) common burst or a UL data burst of a subsequent subframe.

22. The apparatus of claim 17, wherein the DL common burst includes a control region including one or more of the following: a DL grant, resources in the DL data burst for receiving DL data, and a demodulation reference signal.
23. The apparatus of claim 17, wherein the processor is further configured to:
receive a measurement reference signal (M-RS) in the DL common burst of the subframe; and
measure signal strength or signal quality using the received M-RS.
24. The apparatus of claim 17, wherein the processor is configured to:
receive, at the mobile station, DL data in a DL data burst of the subframe;
determine whether the received DL is successfully decoded at the mobile station;
generate an ACK/NACK based on the determination; and
transmit the ACK/NACK in an uplink (UL) common burst of the subframe or a subsequent subframe.
25. The apparatus of claim 17, wherein the channel state information reference signal (CSI-RS) may also be received in a downlink (DL) common burst of an uplink (UL) centric subframe.
26. An apparatus for wireless communication, comprising:
a memory; and
a processor operably coupled to the memory, wherein the processor is configured to:
transmit, at a base station, a channel state information reference signal (CSI-RS) in a downlink (DL) common burst of a DL centric subframe; and
receive, from a mobile station, channel state feedback (CSF) information in response to the CS-RS, wherein the CSF is generated at the mobile station using the CSI-RS.
27. The apparatus of claim 26, wherein the DL common burst comprises symbols that contain DL control information.

28. The apparatus of claim 26, wherein the processor is configured to receive the CSF information at the base station in an uplink (UL) common burst of the subframe.
29. The apparatus of claim 28, wherein the UL common burst and a DL data burst of the subframe are separated by a gap to provide the base station and the mobile station time to transition from DL to UL.
30. The apparatus of claim 26, wherein processor is configured to receive the CSF information at the base station in an uplink (UL) common burst or an UL data burst of a subsequent subframe.
31. The apparatus of claim 26, wherein the DL common burst includes a control region including one or more of the following: a DL grant, resources in the DL data burst for receiving DL data, and a demodulation reference signal.
32. The apparatus of claim 26, wherein the channel state information reference signal (CSI-RS) may also be transmitted in a downlink (DL) common burst of an uplink (UL) centric subframe.
33. A method for wireless communication, comprising:
receiving, at a mobile station, a channel state information reference signal (CSI-RS) in a downlink (DL) common burst of a DL centric subframe;
estimating a channel between a base station and the mobile station using the received CSI-RS;
generating channel state feedback (CSF) information based on the estimated channel;
and
transmitting the CSF information to the base station.
34. The method of claim 33, wherein the DL common burst comprises symbols that contain DL control information.

35. The method of claim 33, wherein transmitting the CSF information comprises transmitting the CSF information to the base station in an uplink (UL) common burst of the subframe.
36. The method of claim 35, wherein the UL common burst and a DL data burst of the subframe are separated by a gap to provide the base station and the mobile station time to transition from DL to UL.
37. The method of claim 35, wherein transmitting the CSF information comprises transmitting the CSF information to the base station in an uplink (UL) common burst or a UL data burst of a subsequent subframe.
38. The method of claim 33, wherein the DL common burst includes a control region including one or more of the following: a DL grant, resources in the DL data burst for receiving DL data, and a demodulation reference signal.
39. The method of claim 33, further comprising:
receiving a measurement reference signal (M-RS) in the DL common burst of the subframe; and
measuring signal strength or signal quality using the received M-RS.
40. The method of claim 39, further comprising determining whether to trigger a handover event for the mobile station based on the measured signal strength or signal quality.
41. The method of claim 33, further comprising:
receiving, at the mobile station, DL data in a DL data burst of the subframe;
determining whether the received DL is successfully decoded at the mobile station;
generating an ACK/NACK based on the determination; and
transmitting the ACK/NACK.
42. The method of claim 41, wherein transmitting the ACK/NACK comprises transmitting the ACK/NACK in an uplink (UL) common burst of the subframe.
43. An apparatus for wireless communication, comprising:

means for receiving, at a mobile station, a channel state information reference signal (CSI-RS) in a downlink (DL) common burst of a DL centric subframe;

means for estimating a channel between a base station and the mobile station using the received CSI-RS;

means for generating channel state feedback (CSF) information based on the estimated channel; and

means for transmitting the CSF information to the base station.

44. A non-transitory computer-readable storage medium comprising code that, when executed by a computer, causes the computer to:

receive, at a mobile station, a channel state information reference signal (CSI-RS) in a downlink (DL) common burst of a DL centric subframe;

estimate a channel between a base station and the mobile station using the received CSI-RS;

generate channel state feedback (CSF) information based on the estimated channel; and

transmit the CSF information to the base station.

45. A method for wireless communication, comprising:

transmitting, at a base station, a channel state information reference signal (CSI-RS) in a downlink (DL) common burst of a DL centric subframe; and

receiving, from a mobile station, channel state feedback (CSF) information in response to the CS-RS, wherein the CSF is generated at the mobile station using the CSI-RS.

46. The method of claim 45, wherein the DL common burst comprises symbols that contain DL control information.

47. The method of claim 45, wherein receiving the CSF information comprises receiving the CSF information at the base station in an uplink (UL) common burst of the subframe.

48. The method of claim 47, wherein the UL common burst and a DL data burst of the subframe are separated by a gap to provide the base station and the mobile station time to transition from DL to UL.

49. The method of claim 45, wherein receiving the CSF information comprises receiving the CSF information at the base station in an uplink (UL) common burst or an UL data burst of a subsequent subframe.
50. The method of claim 45, wherein the DL common burst includes a control region including one or more of the following: a DL grant, resources in the DL data burst for receiving DL data, and a demodulation reference signal.
51. The method of claim 45, further comprising:
transmitting, to the mobile station, a measurement reference signal (M-RS) in the DL common burst of the subframe; and
receiving a signal strength or signal quality measured at the mobile station using the M-RS.
52. The method of claim 45, further comprising:
transmitting, to the mobile station, DL data in a DL data burst of the subframe; and
receiving an ACK/NACK indicating whether the DL data was successfully decoded at the mobile station.
53. The method of claim 52, wherein receiving the ACK/NACK comprises receiving the ACK/NACK in an uplink (UL) common burst of the subframe.
54. An apparatus for wireless communication, comprising:
means for transmitting, at a base station, a channel state information reference signal (CSI-RS) in a downlink (DL) common burst of a DL centric subframe; and
means for receiving, from a mobile station, channel state feedback (CSF) information in response to the CS-RS, wherein the CSF is generated at the mobile station using the CSI-RS.
55. A non-transitory computer-readable storage medium comprising code that, when executed by a computer, causes the computer to:
transmit, at a base station, a channel state information reference signal (CSI-RS) in a downlink (DL) common burst of a DL centric subframe; and

receive, from a mobile station, channel state feedback (CSF) information in response to the CS-RS, wherein the CSF is generated at the mobile station using the CSI-RS.

56. A method for wireless communication, comprising:
transmitting, at a base station, a channel state information reference signal (CSI-RS) in a downlink (DL) common burst of an uplink (UL) centric subframe; and
receiving, from a mobile station, channel state feedback (CSF) information in response to the CS-RS, wherein the CSF is generated at the mobile station based on the CSI-RS.
57. The method of claim 56, wherein the DL common burst comprises symbols that contain DL control information.
58. The method of claim 56, wherein receiving the CSF information comprises receiving the CSF information at the base station in a UL data burst or a UL common burst of the subframe.
59. The method of claim 58, wherein the UL common burst comprises symbols that contain UL control information.
60. The method of claim 56, further comprising receiving uplink data (UL) in a UL data burst of the UL centric subframe, wherein the DL common burst and the UL data burst are separated by a gap to provide the base station and the mobile station time to transition from DL to UL.
61. The method of claim 56, wherein receiving the CSF information comprises receiving the CSF information at the base station in an uplink (UL) common burst or a UL data burst of a subsequent subframe.
62. The method of claim 56, wherein the DL common burst includes a control region including one or more of the following: a UL grant, and resources in the UL data burst for transmitting UL data.
63. The method of claim 56, further comprising:

transmitting a measurement reference signal (M-RS) in the DL common burst of the subframe; and

receiving a signal strength or signal quality measured at the mobile station using the M-RS.

64. The method of claim 56, further comprising transmitting, to the mobile station, a demodulation reference signal and DL data in the DL common burst of the subframe.

65. The method of claim 64, further comprising receiving an ACK/NACK indicating whether the DL data was successfully decoded at the mobile station.

66. The method of claim 65, wherein receiving the ACK/NACK comprises receiving the ACK/NACK in a UL data burst or a UL common burst of the subframe.

67. The method of claim 56, wherein the channel state information reference signal (CSI-RS) may also be transmitted in a downlink (DL) common burst of a downlink (DL) centric subframe.

68. An apparatus for wireless communication, comprising:
means for transmitting, at a base station, a channel state information reference signal (CSI-RS) in a downlink (DL) common burst of an uplink (UL) centric subframe; and
means for receiving, from a mobile station, channel state feedback (CSF) information in response to the CS-RS, wherein the CSF is generated at the mobile station using the CSI-RS.

69. A non-transitory computer-readable storage medium comprising code that, when executed by a computer, causes the computer to:
transmit, at a base station, a channel state information reference signal (CSI-RS) in a downlink (DL) common burst of an uplink (UL) centric subframe; and
receive, from a mobile station, channel state feedback (CSF) information in response to the CS-RS, wherein the CSF is generated at the mobile station using the CSI-RS.

70. A method for wireless communication, comprising:

receiving, at a mobile station, a channel state information reference signal (CSI-RS) in a downlink (DL) common burst of an uplink (UL) centric subframe;
estimating a channel between a base station and the mobile station using the received CSI-RS;
generating channel state feedback (CSF) information based on the estimated channel;
and
transmitting the CSF to the base station.

71. The method of claim 70, wherein the DL common burst comprises symbols that contain DL control information.

72. The method of claim 70, wherein transmitting the CSF information comprises transmitting the CSF information at the base station in a UL data burst or a UL common burst of the subframe.

73. The method of claim 72, wherein the UL common burst comprises symbols that contain UL control information.

74. The method of claim 70, further comprising transmitting uplink data (UL) in a UL data burst of the UL centric subframe, wherein the DL common burst and the UL data burst are separated by a gap to provide the base station and the mobile station time to transition from DL to UL.

75. The method of claim 70, wherein transmitting the CSF information comprises transmitting the CSF information in an uplink (UL) common burst or a UL data burst of a subsequent subframe.

76. The method of claim 70, wherein the DL common burst includes a control region including one or more of the following: a UL grant, and resources in the UL data burst for transmitting UL data.

77. The method of claim 70, further comprising:
receiving a measurement reference signal (M-RS) in the DL common burst of the subframe; and

measuring signal strength or signal quality using the received M-RS.

78. The method of claim 77, further comprising determining whether to trigger a handover event for the mobile station based on the measured signal strength or signal quality.

79. The method of claim 70, further comprising:
receiving, at the mobile station, a demodulation reference signal and DL data in the DL common burst of the subframe; and
demodulating the DL data using the demodulation reference signal.

80. The method of claim 79, further comprising:
determining whether the received DL is successfully decoded at the mobile station;
generating an ACK/NACK based on the determination; and
transmitting the ACK/NACK.

81. The method of claim 80, wherein transmitting the ACK/NACK comprises transmitting the ACK/NACK in a UL data burst or a UL common burst of the subframe.

82. The method of claim 70, wherein the channel state information reference signal (CSI-RS) may also be received in a downlink (DL) common burst of a downlink (DL) centric subframe.

83. An apparatus for wireless communication, comprising:
means for receiving, at a mobile station, a channel state information reference signal (CSI-RS) in a downlink (DL) common burst of an uplink (UL) centric subframe;
means for estimating a channel between a base station and the mobile station using the received CSI-RS;
means for generating channel state feedback (CSF) information based on the estimated channel; and
means for transmitting the CSF to the base station.

84. A non-transitory computer-readable storage medium comprising code that, when executed by a computer, causes the computer to:

receive, at a mobile station, a channel state information reference signal (CSI-RS) in a downlink (DL) common burst of an uplink (UL) centric subframe;

estimate a channel between a base station and the mobile station using the received CSI-RS;

generate channel state feedback (CSF) information based on the estimated channel;

and

transmit the CSF to the base station.