CLAIMS

1. A method in a wireless device for reporting channel state information, CSI, for a CSI process, the CSI process corresponding to a reference signal resource and an interference measurement resource, wherein the reference signal resource comprises a set of resource elements in which one or more reference signals corresponding to a desired signal are received, and wherein the interference measurement resource comprises a set of resource elements in which one or more signals assumed to be interfering with the desired signal are received, the method characterized in:
   - obtaining (810) an adjustment value associated with the CSI process;
   - estimating (820) an effective channel based on one or more reference signals received in the reference signal resource;
   - applying (830) the adjustment value to the estimated effective channel, obtaining an adjusted effective channel;
   - determining (840) channel state information based on the adjusted effective channel, and on interference estimated based on the interference measurement resource; and
   - transmitting (850) the channel state information to a network node.

2. The method of claim 1, wherein the CSI process corresponds to at least two reference signal resources, and wherein an adjustment value is associated with each one of the reference signal resources.

3. The method of claim 2, further comprising:
   - for each reference signal resource of the CSI process, estimating (820) an effective channel based on one or more reference signals received in the reference signal resource, and applying the adjustment value associated with the reference signal resource to the estimated effective channel, obtaining an adjusted effective channel; and
   - determining (840) channel state information based on the adjusted effective channels, and on estimated interference.

4. The method of any one of claims 1-3, wherein the adjustment value is a power measurement offset.

5. The method of claim 4, wherein the method further comprises applying (930) an additional non-CSI process-specific power offset to the estimated effective channel.

6. The method of claim 5, wherein the reference signal is a channel state information reference signal, CSI-RS, and wherein the additional power offset is associated with the CSI-RS.

7. The method of any one of claims 1-3, wherein the adjustment value is a scaling factor.

8. The method of any one of claims 1-7, further comprising determining channel state information for at least one other CSI process based on the adjustment value.

9. The method of any one of claims 1-8, wherein the adjustment value is obtained from a network node.

10. The method of any one of claims 1-8, further comprising receiving an index from a network node, and obtaining the adjustment value by retrieving the adjustment value corresponding to the index from a predefined lookup table.

11. The method of any one of claims 1-10, wherein the channel state information comprises one or more of: a channel quality indicator, a precoding matrix indicator, a rank indication, and a precoding matrix type.

12. The method of any one of claims 1-11 wherein the wireless device is configured with two CSI processes corresponding to the same reference signal resource, and associated with different adjustment values.

13. The method of any one of claims 1-12, wherein the reference signal resource is a CSI-RS resource.

14. The method of any one of claims 1-12, wherein the interference measurement resource is a cell-specific reference signal resource, and wherein interference is estimated by subtracting a decoded cell-specific reference signal from the signal received in the cell-specific reference signal resource.

15. A method in a network node for receiving, from a wireless device, channel state information, CSI, for a CSI process, the CSI process corresponding to a reference

signal resource and an interference measurement resource, wherein the reference signal resource comprises a set of resource elements in which one or more reference signals corresponding to a signal intended for reception by the wireless device are transmitted, and wherein the interference measurement resource comprises a set of resource elements in which one or more signals assumed to be interfering with the desired signal are present, the network node being comprised in a cluster for coordinated multipoint transmission, the method characterized in:

- transmitting (1130), to the wireless device, an indication of an adjustment value associated with the CSI process;
- receiving (1140) channel state information related to the CSI process from the wireless device.

16. The method of claim 15, further comprising determining (1120) the adjustment value based on an interference hypothesis associated with the CSI process, the interference hypothesis corresponding to a set of transmission points assumed to be interfering with a signal intended for reception by the wireless device.

17. The method of any one of claims 15-16, wherein the adjustment value is determined such that it compensates for interference from an assumed interfering transmission point according to the interference hypothesis, which interference will not be estimated by the wireless device.

18. The method of any one of claims 15-17, wherein the adjustment value compensates for interference from one or more transmission points that are assumed to be interfering according to the interference hypothesis, but are not comprised in the measurement set for the wireless device.

19. The method of any one of claims 15-18, further comprising:

- transmitting (1110) configuration information for the CSI process to the wireless device, wherein the indication of the adjustment value is comprised in the configuration information.

20. The method of any one of claims 15-19, further comprising performing (1150) link adaptation based on the received channel state information.

21. A wireless device (1300) for reporting channel state information, CSI, for a CSI process, the CSI process corresponding to a reference signal resource and an

interference measurement resource, wherein the reference signal resource comprises a set of resource elements in which one or more reference signals corresponding to a desired signal are received, and wherein the interference measurement resource comprises a set of resource elements in which one or more signals assumed to be interfering with the desired signal are received, the wireless device comprising radio circuitry (1310) and processing circuitry (1320), characterized in that the processing circuitry (1320) is configured to:

- obtain an adjustment value associated with the CSI process;
- estimate an effective channel based on one or more reference signals received, via the radio circuitry (1310), in the reference signal resource;
- apply the adjustment value to the estimated effective channel, obtaining an adjusted effective channel;
- determine channel state information based on the adjusted effective channel, and on interference estimated based on the interference hypothesis; and
- transmit, via the radio circuitry (1310), the channel state information to a network node (1200).

22. A network node (1200) for receiving, from a wireless device (1300), channel state information, CSI, for a CSI process, the CSI process corresponding to a reference signal resource and an interference measurement resource, wherein the reference signal resource comprises a set of resource elements in which one or more reference signals corresponding to a signal intended for reception by the wireless device are transmitted, and wherein the interference measurement resource comprises a set of resource elements in which one or more signals assumed to be interfering with the desired signal are present, the network node (1200) comprising radio circuitry (1210) and processing circuitry (1220), characterized in that the processing circuitry (1220) is configured to:

- transmit, via the radio circuitry (1210), an indication of an adjustment value associated with the CSI process to the wireless device (1300);
- receive, via the radio circuitry (1210), channel state information related to the CSI process from the wireless device (1300).

The invention claimed is:

1. A method performed in a wireless node which communicates with a network node, for reporting channel state information, CSI, for at least two CSI processes, each of the at least two CSI processes corresponding to a reference signal resource and an interference measurement resource, wherein the reference signal resource includes a first set of resource elements in which one or more reference signals corresponding to a desired signal are received, and wherein the interference measurement resource includes a second set of resource elements in which one or more signals assumed to be interfering with the desired signal are received, the method comprising for each of the at least two CSI processes:

obtaining an adjustment value associated with the CSI process;

determining an adjusted effective channel based on the adjustment value and the one or more reference signals received in the reference signal resource;

determining channel state information for the CSI process based on the adjusted effective channel, and on interference estimated based on the interference measurement resource; and

transmitting the channel state information to the network node.

2. The method of claim 1, wherein each of the CSI processes further corresponds respectively to one or more interference emulation configurations, wherein each interference emulation configuration is associated with a reference signal received from an assumed interferer, the method further comprising, for each of the at least two CSI processes:

estimating, for each interference emulation configuration corresponding to the CSI process, an effective channel based on the associated reference signal;

emulating interference for each interference emulation configuration based on the estimated effective channel for that configuration; and

determining channel state information for the CSI process based also on the emulated interference.

3. The method of claim 2, further comprising applying the adjustment value to the emulated interference for each interference emulation configuration.

4. The method of claim 2, further comprising obtaining a second adjustment value for the interference emulation configurations, and applying the second adjustment value to

the emulated interference for each configuration.

5. The method of claim 1, wherein one or more of the at least two CSI processes corresponds to at least two reference signal resources, and wherein, for each of the one or more CSI processes, an individual adjustment value is associated with each one of the reference signal resources.

6. The method of claim 1, wherein the adjustment value is a power measurement offset.

7. The method of claim 1, wherein the adjustment value is a scaling factor.

8. The method of claim 1, wherein the adjustment value for each CSI process is obtained from a network node.

9. The method of claim 1, further comprising, for each of the at least two CSI processes:

receiving a CSI process adjustment value index, from a network node, the CSI process adjustment value index being an index into a predefined lookup table, and

retrieving the adjustment value for the CSI process from the predefined lookup table in accordance with the received CSI process adjustment value index.

10. The method of claim 1, wherein the channel state information comprises one or more of: a channel quality indicator, a precoding matrix indicator, a rank indication, and a precoding matrix type.

11. The method of claim 1 wherein the wireless node is configured with two CSI processes corresponding to the same reference signal resource, and associated with different adjustment values.

12. The method of claim 1, wherein the reference signal resource is a CSI-RS resource.

13. The method of claim 1, wherein the interference measurement resource is a cell-specific reference signal resource, and wherein interference is estimated by subtracting a decoded cell-specific reference signal from the signal received in the cell-specific

reference signal resource.

14. The method of claim 1, wherein the wireless node comprises a user equipment, UE.

15. A method in a network node for receiving, from a wireless node which communicates with the network node, channel state information, CSI, for at least two CSI processes, each of the at least two CSI process corresponding to a reference signal resource and an interference measurement resource, wherein the reference signal resource includes a set of resource elements in which one or more reference signals corresponding to a desired signal are received, and wherein the interference measurement resource includes a set of resource elements in which one or more signals assumed to be interfering with the desired signal are present, the network node being included in a cluster for coordinated multipoint transmission, the method comprising for each of the at least two processes:

transmitting, to the wireless node, an indication of an adjustment value associated with the CSI process;

receiving channel state information related to the CSI process using the adjustment value from the wireless node.

16. The method of claim 15, further comprising determining the adjustment value based on an interference hypothesis associated with the CSI process, the interference hypothesis corresponding to a set of transmission points assumed to be interfering with a signal intended for reception by the wireless node.

17. The method of claim 15, wherein the adjustment value compensates for interference from one or more transmission points that are assumed to be interfering according to an interference hypothesis, but are not comprised in a measurement set for the wireless device.

18. The method of claim 15, further comprising:

transmitting configuration information for the CSI process to the wireless node.

19. The method of claim 18, wherein the indication of the adjustment value is comprised in the configuration information.

20. The method of claim 15, further comprising performing link adaptation based on the received channel state information.

21. A wireless device for reporting channel state information, CSI, for at least two CSI processes, each of the at least two CSI processes corresponding to a reference signal resource and an interference measurement resource, wherein the reference signal resource includes a set of resource elements in which one or more reference signals corresponding to a desired signal are received, and wherein the interference measurement resource includes a set of resource elements in which one or more signals assumed to be interfering with the desired signal are received, the wireless device comprising a wireless node which communicates with a network node, the wireless device comprising radio circuitry and processing circuitry, the processing circuitry being configured to:

obtain an adjustment value associated with the CSI process;

determine an adjusted effective channel based on the adjustment value and one or more reference signals received in the reference signal resource;

determine channel state information based on the adjusted effective channel, and on interference estimated based on an interference hypothesis; and

transmit, via the radio circuitry, the channel state information to the network node.

22. A network node for receiving, from a wireless node which communicates with the network node, channel state information, CSI, for at least two CSI processes, each of the at least two CSI processes corresponding to a reference signal resource and an interference measurement resource, wherein the reference signal resource includes a set of resource elements in which one or more reference signals corresponding to a signal intended for reception in the wireless device are transmitted, and wherein the interference measurement resource includes a set of resource elements in which one or more signals assumed to be interfering with the intended signal are present, the network node including radio circuitry and processing circuitry, the processing circuitry being configured, for each of the at least two CSI processes, to:

transmit, via the radio circuitry, an indication of an adjustment value associated with the CSI process to the wireless node;

receive, via the radio circuitry, channel state information related to the CSI process using the adjustment value from the wireless node.