CLAIMS

1. A method for communication by a user equipment (UE), comprising:

receiving, from a network entity, a channel state information (CSI) report configuration, configuring the UE for reporting at least a plurality of frequency domain (FD) bases information for a plurality of layers;

identifying, from a set of candidate FD bases, one or more FD bases for each layer, wherein the identified one or more FD bases for each layer comprises a reference FD basis, wherein the reference FD basis corresponds to a strongest FD basis; and

providing a report indicating the remaining FD bases other than the reference FD basis identified for each layer according to the CSI report configuration,

wherein

the one or more FD bases for each layer are selected from an intermediate set of FD bases that comprises a subset of available candidate FD bases; and

the reference FD basis is located within the intermediate set.

2. The method of claim 1, wherein the report indicates each of the remaining identified FD basis comprises a report indicating an offset relative to an index of the reference FD basis.

3. The method of claim 1, wherein the report indicating each of the rest identified FD basis comprises a report indicating the index of each of the rest identified FD basis.

4. The method of claim 2 or 3, further comprising:

mapping, for each level, the combination of offsets or indices for each selected FD to a codepoint; and

providing the codepoint for each level in the report.

5. The method of claim 4, wherein the codepoint is generated by:

obtaining values from a table with entries having row indices that correspond to offsets or indices to encode in the codepoint and column indices that correspond to orders of the offsets or indices when ranked in ascending order; and

summing the obtained values to generate the codepoint.

6. The method of claim 1, wherein the reference FD basis comprises:

a first FD basis in a set of available FD bases; or

a last FD basis in a set of available FD bases; or

a FD basis in the middle of the available FD bases.

7. The method of claim 1, wherein identifying one or more FD bases for each layer further comprises identifying a subset of one or more FD bases and the subset is common for all layers.

8. The method of claim 1, wherein the report indicates each of the remaining identified FD basis selected from the intermediate set as:

an index in the intermediate set; or

an offset relative to an index of the reference FD basis within the intermediate set.

9. The method of claim 1, wherein the intermediate set of FD bases comprises a subset of one or more FD bases and the subset is common for all layers.

10. The method of claim 1, wherein each FD basis selected for each layer is indicated by an offset index relative to a local index of the reference FD basis within the intermediate set.

11. The method of claim 1, wherein the reference FD basis comprises:

a first FD basis in the intermediate set of FD bases;

a last FD basis in the intermediate set of FD bases; or

a FD basis in the middle of the intermediate set of FD bases.

12. The method of claim 1, wherein the reference FD basis corresponds to a strongest FD basis in the intermediate set of FD bases.

13. The method of claim 1, wherein the reference FD basis is defined in a standard specification.

14. The method of claim 1, further comprising receiving signaling configuring the reference FD basis.

15. A method for communication by a network entity, comprising:

signaling, to a user equipment (UE), a channel state information (CSI) report configuration, configuring the UE for reporting at least a plurality of frequency domain (FD) bases information for a plurality of layers;

receiving a report from the UE identifying, from a set of candidate FD bases, one or more FD bases selected for each layer according to the CSI report configuration, wherein the identified one or more FD bases for each layer comprises a reference FD basis and the report indicates the remaining FD bases other than the reference FD basis identified for each layer, wherein the reference FD basis corresponds to a strongest FD basis; and

using the FD bases identified in the report for subsequent communications with the UE,

wherein

the one or more FD bases for each layer are selected from an intermediate set of FD bases that comprises a subset of available candidate FD bases; and

the reference FD basis is located within the intermediate set.

16. The method of claim 15, wherein the report indicates each of the remaining identified FD bases as an offset relative to an index of the reference FD basis.

17. The method of claim 15, wherein the report indicates the index of each of the remaining identified FD bases.

18. The method of claims 16 or 17, wherein:

the report comprises, for each level, a codepoint that maps to the combination of offsets or indices for each selected FD; and

the network entity demaps the codepoints to identify the individual offsets or indices.

19. The method of claim 18, wherein demapping the codepoints further comprises:

demapping the codepoints based on a plurality of one or more values in a table, wherein the row index of each of the one or more value corresponds to an offset or index of FD basis, and the column index of each of the one or more value corresponds to the

order of the offset or index of the FD basis when the offsets or indices FD bases are ranked in ascending order.

20. The method of claim 15, wherein the reference FD basis comprises:
a first FD basis in a set of available FD bases;
a last FD basis in a set of available FD bases; or
a FD basis in the middle of the available FD bases.

21. The method of claim 15, wherein identifying one or more FD bases for each layer further comprises identifying a subset of one or more FD bases and the subset is common for all layers.

22. The method of claim 15, wherein the report indicates each of the remaining identified FD basis selected from the intermediate set as:
an index in the intermediate set; or
an offset relative to an index of the reference FD basis within the intermediate set.

23. The method of claim 15, wherein the intermediate set of FD bases comprises a subset of one or more FD bases and the subset is common for all layers.

24. The method of claim 15, wherein each FD basis selected for each layer is indicated by an offset index relative to a local index of the reference FD basis within the intermediate set.

25. The method of claim 15, wherein the reference FD basis comprises:
a first FD basis in the intermediate set of FD bases;
a last FD basis in the intermediate set of FD bases; or
a FD basis in the middle of the intermediate set of FD bases.

26. The method of claim 15, wherein the reference FD basis corresponds to a strongest FD basis in the intermediate set of FD bases.

27. The method of claim 15, wherein the reference FD basis is defined in a standard specification.

28. The method of claim 15, further comprising providing signaling configuring the reference FD basis.

29. An apparatus for communication by a user equipment (UE), comprising:

means for receiving, from a network entity, a channel state information (CSI) report configuration, configuring the UE for reporting at least a plurality of frequency domain (FD) bases information for a plurality of layers;

means for identifying, from a set of candidate FD bases, one or more FD bases for each layer, wherein the identified one or more FD bases for each layer comprises a reference FD basis, wherein the reference FD basis corresponds to a strongest FD basis; and

means for providing a report indicating the remaining FD bases other than the reference FD basis identified for each layer according to the CSI report configuration,

wherein

the one or more FD bases for each layer are selected from an intermediate set of FD bases that comprises a subset of available candidate FD bases; and

the reference FD basis is located within the intermediate set.

30. An apparatus for communication by a network entity, comprising:

means for signaling, to a user equipment (UE), a channel state information (CSI) report configuration, configuring the UE for reporting at least a plurality of frequency domain (FD) bases information for a plurality of layers;

means for receiving a report from the UE identifying, from a set of candidate FD bases, one or more FD bases selected for each layer according to the CSI report configuration, wherein the identified one or more FD bases for each layer comprises a reference FD basis and the report indicates the remaining FD bases other than the reference FD basis identified for each layer, wherein the reference FD basis corresponds to a strongest FD basis; and

means for using the FD bases identified in the report for subsequent communications with the UE,

wherein

the one or more FD bases for each layer are selected from an intermediate set of FD bases that comprises a subset of available candidate FD bases; and

the reference FD basis is located within the intermediate set.

31. An apparatus for communication by a user equipment (UE), comprising:

a receiver configured to receive, from a network entity, a channel state information (CSI) report configuration, configuring the UE for reporting at least a plurality of frequency domain (FD) bases information for a plurality of layers; and

at least one processor configured to identify, from a set of candidate FD bases, one or more FD bases for each layer, wherein the identified one or more FD bases for each layer comprises a reference FD basis and to provide a report indicating the remaining FD bases other than the reference FD basis identified for each layer according to the CSI report configuration, wherein the reference FD basis corresponds to a strongest FD basis,

wherein

the one or more FD bases for each layer are selected from an intermediate set of FD bases that comprises a subset of available candidate FD bases; and

the reference FD basis is located within the intermediate set.

32. An apparatus for communication by a network entity, comprising:

a transmitter configured to signal, to a user equipment (UE), a channel state information (CSI) report configuration, configuring the UE for reporting at least a plurality of frequency domain (FD) bases information for a plurality of layers;

a receiver configured to receive a report from the UE identifying, from a set of candidate FD bases, one or more FD bases selected for each layer according to the CSI report configuration, wherein the identified one or more FD bases for each layer comprises a reference FD basis and the report indicates the remaining FD bases other than the reference FD basis identified for each layer, wherein the reference FD basis corresponds to a strongest FD basis; and

at least one processor configured to use the FD bases identified in the report for subsequent communications with the UE,

wherein

the one or more FD bases for each layer are selected from an intermediate set of FD bases that comprises a subset of available candidate FD bases; and

the reference FD basis is located within the intermediate set.