CLAIMS

1. A method of a multilayer transmission in a wireless network, comprising:

generating (1310), at a transmitter, a group of binary data bits for resources of each layer of a plurality of layers, wherein the resources are allocated or assigned among the plurality of layers, wherein the multi-layer transmission comprises four resources and six layers, wherein a number of resources used by each of the layers is two, and wherein the six layers are configured as three orthogonal pairs;

mapping (1320), at the transmitter, the group of binary data bits of each layer of the plurality of layers to respective code words in a signal constellation, wherein the mapping is based at least on maximizing a distance between the code words within each layer of the plurality of layers;

combining (1330), at the transmitter, the code words, wherein the code words associated with all the layers of a resource are combined to produce a combined code word for that resource; and

transmitting (1340), from the transmitter, the combined code word to a receiver in the wireless network;

wherein the method further comprises rotating the signal constellation across the three orthogonal pairs for increasing distance between the code words of each of the plurality of layers.

2. The method of claim 1, wherein the multi-layer transmission is a sparse code multiple access, SCMA, transmission.

3. The method of claim 1, wherein the resources are orthogonal resources, and further comprising:

creating the orthogonal resources using tones in orthogonal frequency division multiple access, OFDMA, orthogonal codes in code division multiple access, times in time division multiplexing, TDM, or different spatial signatures.

4. The method of claim 1, wherein the three orthogonal pair comprise a first orthogonal pair, a second orthogonal pair, and a third orthogonal pair, and wherein the second orthogonal pair is obtained by rotating the signal constellation by 60 degrees and the third orthogonal pair is obtained by rotating the signal constellation by 120 degrees.

5. An apparatus for a multilayer transmission in a wireless network, comprising:

means for generating (1310), at a transmitter, a group of binary data bits for resources of each layer of a plurality of layers, wherein the resources are allocated or assigned among the plurality layers, wherein the multi-layer transmission comprises four resources and six layers, wherein a number of resources used by each of the layers is two, and wherein the six layers are configured as three orthogonal pairs;

means for mapping (1320), at the transmitter, the group of binary data bits of each layer of the plurality of layers to respective code words in a signal constellation, wherein the mapping is based at least on maximizing a distance between the code words within each layer of the plurality of layers;

means for combining (1330), at the transmitter, the code words, wherein the code words associated with all the layers of a resource are combined to produce a combined code word for that resource; and

means for transmitting (1340), from the transmitter, the combined code word to receiver in the wireless network;

wherein the apparatus further comprises means for rotating the signal constellation across the three orthogonal pairs for increasing distance between the code words of each of the plurality of layers.

6. The apparatus of claim 5, wherein the multi-layer transmission is a sparse code multiple access, SCMA, transmission.

7. The apparatus of claim 5, wherein the resources are orthogonal resources, and further comprising:

means for creating the orthogonal resources using tones in orthogonal frequency division multiple access, OFDMA, orthogonal codes in code division multiple access, times in time division multiplexing, TDM, or different spatial signatures.

8. A computer program comprising instructions which, when executed by a computer, cause the computer to implement any method of claims 1-4.