CLAIMS:

1. A method for determining an uplink multiple input multiple output (MIMO) transmission 8-antenna port multi-antenna panel codebook, comprising:

determining a first beam of a first transmission layer;

determining codebook coefficients configured for constructing an 8-antenna port codebook, wherein the codebook coefficients comprise first co-phase coefficients and an inter-panel compensation factor; and

determining, according to the first beam and the codebook coefficients, an L-layer codeword of the 8-antenna port multi-antenna panel, where L is a positive integer greater than or equal to 1 and less than or equal to 4.

2. The method according to claim 1, wherein determining, according to the first beam and the codebook coefficients, the L layer codeword of the 8-antenna port multi-antenna panel comprises:

determining a first codeword of the L-layer codeword of the 8-antenna port multi-antenna panel for a first antenna panel according to the first beam and the first co-phase coefficients;

for an n_g-th antenna panel, determining an inter-panel compensation factor of the n_g-th antenna panel, where $2 \leqslant n_g \leqslant N_g$, N_g is a count of antenna panels; and

determining a second codeword of the L-layer codeword of the 8-antenna port multi-antenna panel for the n_g-th antenna panel according to the inter-panel compensation factor of the n_g-th antenna panel and the first codeword.

3. The method according to claim 2, wherein determining the first codeword of the L-layer codeword of the 8-antenna port multi-antenna panel for the first antenna panel according to the first beam and the first co-phase coefficients comprises:

determining a second beam orthogonal to the first beam;

determining, according to the first co-phase coefficients, second co-phase coefficients that are able to make codewords orthogonal; and

determining the first codeword for the first antenna panel according to at least part of parameters of the first beam and the second beam, the first co-phase coefficients and the second co-phase coefficients.

4. The method according to claim 3, wherein determining the first codeword for the first antenna panel according to at least part of parameters of the first beam and the second beam, the first co-phase coefficients and the second co-phase coefficients comprises:

in a case of inter-panel fully coherence transmission, determining a first candidate codeword and a second candidate codeword by combining the first beam with the first co-phase coefficients and the second co-phase coefficients respectively;

determining a third candidate codeword and a fourth candidate codeword by combining the second beam with the first co-phase coefficients and the second co-phase coefficients respectively; and

determining a first codeword of each transmission layer according to orthogonality of the first candidate codeword, the second candidate codeword, the third candidate codeword and the fourth candidate codeword.

5. The method according to claim 3, wherein determining the first codeword for the first antenna panel according to at least part of parameters of the first beam and the second beam, the first co-phase coefficients and the second co-phase coefficients comprises:

in a case of inter-panel non coherence transmission and a count of antenna panels being 2, determining a first candidate codeword by combining the first beam with the first co-phase coefficients;

determining a third candidate codeword by combining the second beam with the first co-phase coefficients;

for the first transmission layer and a second transmission layer being transmitted on the first antenna panel, determining one candidate codeword of the first candidate codeword and the third candidate codeword as a first codeword of the first transmission layer; and

determining the other candidate codeword of the first candidate codeword and the third candidate codeword as a first codeword of the second transmission layer.

6. The method according to claim 3, wherein determining the first codeword for the first antenna panel according to at least part of parameters of the first beam and the second beam, the first co-phase coefficients and the second co-phase coefficients comprises:

in a case of inter-panel non coherence transmission and a count of antenna panels being 2, determining a first candidate codeword by combining the first beam with the first co-phase coefficients;

determining a second candidate codeword by combining the first beam with the second co-phase coefficients;

for the first transmission layer and a second transmission layer being transmitted on the first antenna panel, determining one candidate codeword among the first candidate codeword and the second candidate codeword as a first codeword of the first transmission layer; and

determining the other candidate codeword among the first candidate codeword and the second candidate codeword as a first codeword of the second transmission layer.

7. The method according to claim 5 or 6, wherein determining the second codeword of the L-layer codeword of the 8-antenna port multi-antenna panel for the n_g-th antenna panel according to the inter-panel compensation factor of the n_g-th antenna panel and the first codeword comprises:

for a third transmission layer and a fourth transmission layer being transmitted on a second antenna panel, determining a second codeword of the third transmission layer corresponding to the second antenna panel by multiplying the inter-panel compensation factor of the second antenna panel by the first codeword of the first transmission layer; and

determining a second of the fourth transmission layer corresponding to the second antenna panel by multiplying the inter-panel compensation factor of the second antenna panel by the first codeword of the second transmission layer.

8. The method according to claim 3, wherein determining the first codeword for the first antenna panel according to at least part of parameters of the first beam and the second beam, the first co-phase coefficients and the second co-phase coefficients comprises:

in a case of inter-panel non coherence transmission and a count of antenna panels being 4, determining a first candidate codeword by combining the first beam with the first co-phase coefficients; and

for the first transmission layer being transmitted on the first panel, determining the first candidate codeword as the first codeword of the first transmission layer.

9. The method according to claim 8, wherein determining the second codeword of the L-layer codeword of the 8-antenna port multi-antenna panel for the n_g-th antenna panel according to the inter-panel compensation factor of the n_g-th antenna panel and the first codeword comprises:

determining the second codeword of a transmission layer corresponding to the n_g-th antenna panel by multiplying the inter-panel compensation factor of the n_g-th antenna panel by the first codeword of the first transmission layer.

10. The method according to claim 3, wherein determining the first codeword for the first antenna panel according to at least part of parameters of the first beam and the second beam, the first co-phase coefficients and the second co-phase coefficients comprises:

in case of inter-panel partial coherence transmission, antenna panels being divided into two groups, each group comprising two antenna panels, and coherence transmission being performed between antenna panels in each group,

determining a first candidate codeword by combining the first beam with the first co-phase coefficients, and determining a third candidate codeword by combining the second beam with the first co-phase coefficients;

for the first transmission layer and a second transmission layer being transmitted on the first antenna panel, determining one candidate codeword among the first candidate codeword and the third candidate codeword as a first code word of the first transmission layer; and

determining the other candidate codeword among the first candidate codeword and the third candidate codeword as a first codeword of the second transmission layer.

11. The method according to claim 3, wherein determining the first codeword for the

first antenna panel according to at least part of parameters of the first beam and the second beam, the first co-phase coefficients and the second co-phase coefficients comprises:

in case of inter-panel partial coherence transmission, antenna panels being divided into two groups, each group comprising two antenna panels, and coherence transmission being performed between antenna panels in each group,

determining a first candidate codeword by combining the first beam with the first co-phase coefficients, and determining a second candidate codeword by combining the first beam with the second co-phase coefficients;

for the first transmission layer and a second transmission layer being transmitted on the first antenna panel, determining one candidate codeword among the first candidate codeword and the second candidate codeword as a first code word of the first transmission layer; and

determining the other candidate codeword among the first candidate codeword and the second candidate codeword as a first codeword of the second transmission layer.

12. The method according to claim 10 or 11, further comprising:

in a case where the first antenna panel is in a first group, for an n_j-th antenna panel in the first group, obtaining a second codeword of the first transmission layer corresponding to the n_j-th antenna panel by multiplying an inter-panel compensation factor of the n_j-th antenna panel and the first codeword of the first transmission layer; and

obtaining a second codeword of the second transmission layer corresponding to the n_j-th antenna panel by multiplying an inter-panel compensation factor of the n_j-th antenna panel and the first codeword of the second transmission layer, where $2 \leqslant n_j \leqslant N_g$.

13. The method according to claim 10 or 11, further comprising:

for an n_g-th antenna panel in a second group, obtaining a second codeword of a third transmission layer corresponding to the n_g-th antenna panel by multiplying an inter-panel compensation factor of the n_g-th antenna panel and the first codeword of the first transmission layer; and

obtaining a second codeword of the fourth transmission layer corresponding to the n_g-th antenna panel by multiplying an inter-panel compensation factor of the n_g-th antenna panel

and the first codeword of the second transmission layer.

14. The method according to claim 3, wherein determining the first codeword for the first antenna panel according to at least part of parameters of the first beam and the second beam, the first co-phase coefficients and the second co-phase coefficients comprises:

in case of inter-panel partial coherence transmission, antenna panels being divided into two groups, one of which comprising three antenna panels, and coherence transmission being performed between the three antenna panels in the group,

determining a first candidate codeword by combining the first beam and the first co-phase coefficients; and

for the first transmission layer being transmitted on the first antenna panel, determining the first candidate codeword as a first codeword of the first transmission layer.

15. The method according to claim 14, further comprising:

determining a second candidate codeword by combining the first beam with the second co-phase coefficients;

determining a third candidate codeword by combining the second beam with the first co-phase coefficients; and

obtaining second codewords of remaining transmission layers by multiplying the inter-panel compensation factor of the n_g-th antenna panel by the first codeword of the first transmission layer, the second candidate codeword and the third candidate codeword respectively.

16. The method according to any one of claims 1-15, wherein determining, according to the first beam and the codebook coefficients, the L-layer codeword of the 8-antenna port multi-antenna panel comprises:

in a case where $L<4$, determining, according to the first beam and the codebook coefficients, a four-layer codeword of the 8-antenna port multi-antenna panel; and

generating the L-layer codeword of the 8-antenna port multi-antenna panel by selecting any L columns of vectors from the four-layer codeword of the 8-antenna port multi-antenna

panel.

17. The method according to claim 16, wherein selecting any L columns of vectors from the four-layer codeword of the 8-antenna port multi-antenna panel comprises:

determining a transmission layer set corresponding to each of the antenna panels, wherein the transmission layer set comprises at least one transmission layer, and each transmission layer corresponds to one column of vector; and

obtaining the L columns of vectors by selecting at least one column of vector from each transmission layer set.

18. The method according to any one of claims 1 to 17, further comprising:

determining a normalization coefficient of any codeword, and performing energy normalization processing on the any codeword based on the normalization coefficient.

19. A communication device, comprising a processor and a memory having a computer program stored thereon, wherein the processor is configured to perform the computer program stored on the memory, causing the device to perform the method according to any one of claims 1 to 18.

20. A computer-readable storage medium configured to store instructions that, when executed, cause the method according to any one of claims 1 to 18 to be implemented.