WHAT IS CLAIMED IS:

1. A detection apparatus for a CT system, comprising:

a high-energy detector assembly comprising a plurality of rows of high-energy detectors arranged along a predetermined trajectory;

a low-energy detector assembly comprising a plurality of rows of low-energy detectors arranged at intervals along the predetermined trajectory, the low-energy detector assembly and the high-energy detector assembly being disposed in a stack;

wherein the low-energy detector assembly is disposed closer to the radiation source than the high-energy detector assembly;

a number of rows of the low-energy detectors is smaller than a number of rows of the high-energy detectors; and

each row of the low-energy detectors covers a row of the high-energy detectors, wherein any two adjacent rows of the high-energy detectors are closely arranged.

2. The detection apparatus of claim 1, wherein at least one row of the high-energy detectors not covered by the low-energy detectors is arranged between any two adjacent rows of the high-energy detectors covered by the low-energy detectors.

3. The detection apparatus of claim 1, wherein the high-energy detectors covered by the low-energy detectors and the high-energy detectors not covered by the low-energy detectors are alternately arranged along the predetermined trajectory.

4. The detection apparatus of claim 1, wherein any two adjacent rows of the low-energy detectors are separated by a second preset interval.

5. The detection apparatus of claim 4, wherein the second preset interval is 5 mm to 80 mm; or

the second preset interval is 30 mm to 50 mm.

6. The detection apparatus of claim 1, wherein the predetermined trajectory is a circular arc.

7. A detection apparatus for a CT system, comprising:

a first layer detector assembly, a second layer detector assembly,…, and a N-th layer detector assembly being stacked, where N is an integer greater than 2;

wherein the first layer detector assembly comprises a plurality of rows of first detectors arranged along a predetermined trajectory, the second layer detector assembly comprises a plurality of rows of second detectors arranged at intervals along the predetermined trajectory,…, and the N-th layer detector assembly comprises a plurality of rows of N-th detectors arranged at intervals along the predetermined trajectory;

an energy corresponding to an energy response peak of the first detectors, an energy corresponding to an energy response peak of the second detectors,…, and an energy corresponding to an energy response peak of the N-th detectors successively decrease;

the first layer detector assembly, the second layer detector assembly,…, and the N-th layer detector assembly are arranged in this order so that the distance from the radiation source becomes distant;

a number of rows of detectors in a (k+1)-th layer detector assembly is smaller than a number of rows of detectors in a k-th layer detector assembly, where k = 1, 2, …, N-1; and

each row of the detectors in the (k+1)-th layer detector assembly covers a row of the detectors in the k-th layer detector assembly, wherein any two adjacent rows of the first detectors are closely arranged.

8. A CT system, comprising:

a scanning channel for an object under inspection to enter and exit the CT system;

a slip ring configured to rotate around the scanning channel;

a radiation source connected with the slip ring; and

a detection apparatus arranged oppositely to the radiation source and connected with the

slip ring, wherein the detection apparatus is the detection apparatus of any of claims 1-7.

9. The CT system of claim 8, further comprising:

a data processing module configured to reconstruct a CT image of the object under inspection based on a data signal output by the detection apparatus.