WHAT IS CLAIMED IS:

1. A source-conversion unit, comprising:

an image-forming means comprising:

an upper layer with a plurality of upper 4-pole structures, and

a lower layer with a plurality of lower 4-pole structures respectively corresponding to the plurality of upper 4-pole structures,

wherein the plurality of upper 4-pole structures are aligned with the respective plurality of lower 4-pole structures to form a plurality of pairs of 4-pole structures,

wherein a pair of 4-pole structure functions as at least a micro-deflector to deflect a beamlet of a charged particle beam generated by a charged particle source to form a virtual image of the charged particle source.

2. The source-conversion unit of claim 1, wherein the pair of 4-pole structure functions as the micro-deflector, and at least one of a micro-lens to focus the beamlet to a desired degree and a micro-stigmator to add a desired amount of astigmatism aberration to the beamlet.

3. The source-conversion unit of claim 1, further comprising:

a beamlet-limit element disposed below the image-forming element and including a plurality of beam-limit openings respectively corresponding to the plurality of pairs of 4-pole structures to limit a plurality of beamlets deflected by the plurality of pairs of 4-pole structures.

4. The source-conversion unit of claim 3, wherein each one of the plurality of beam-limit openings is aligned with a corresponding pair of the plurality of pairs of 4-pole structures.

5. The source-conversion unit of claim 1, wherein in each pair of 4-pole structures, a 4-pole structure of the upper layer and a 4-pole structure of the second layer have a 45° difference in azimuth.

6. The source-conversion unit of claim 1, further comprising:
an upper electric conduction plate with a plurality of through-holes, each through-hole is aligned with a corresponding pair of the plurality of pairs of 4-pole structures.

7. The source-conversion unit of claim 6, wherein the upper electric conduction plate is disposed below the plurality of pairs of 4-pole structures.

8. The source-conversion unit of claim 6, wherein the upper electric conduction plate is disposed above the plurality of pairs of 4-pole structures.

9. The source-conversion unit of claim 8, further comprising:
a lower electric conduction plate disposed below the plurality of pairs of 4-pole structures.

10. The source-conversion unit of claim 1, wherein the charged particle source is an electron source, and the charged particle beam is an electron beam.

11. A multi-beam apparatus, comprising the source-conversion unit of claim 1.

12. A method to configure a source-conversion unit, comprises:
providing an image-forming means comprising:
an upper layer with a plurality of upper 4-pole structures; and
a lower layer with a plurality of lower 4-pole structures respectively corresponding to the plurality of upper 4-pole structures,
wherein the plurality of upper 4-pole structures are aligned with the respective plurality of lower 4-pole structures to form a plurality of pairs of multi-pole structures,

wherein a pair of 4-pole structure functions as a micro-deflector to deflect a beamlet of a charged particle beam generated by a charged particle source to form a virtual image of the charged particle source.

13. The method of claim 12, wherein the pair of 4-pole structures functions as the micro-deflector, and at least one of a micro-lens to focus the beamlet to a desired degree and a micro-stigmator to add a desired amount of astigmatism aberration to the beamlet.

14. The method of claim 12, further comprising:

providing a beamlet-limit element disposed below the image-forming element and including a plurality of beam-limit openings respectively corresponding to the plurality of pairs of 4-pole structures to limit a plurality of beamlets deflected by the plurality of pairs of 4-pole structures.

15. The method of claim 14 wherein each one of the plurality of beam-limit openings is aligned with a corresponding pair of the plurality of pairs of 4-pole structures.

16. The method of claim 12, wherein in each pair of 4-pole structures, a 4-pole structure of the upper layer and a 4-pole structure of the second layer have a 45° difference in azimuth.

17. The method of claim 12, further comprising:

providing an upper electric conduction plate with a plurality of through-holes, each through-hole is aligned with a corresponding pair of the plurality of pairs of 4-pole structures.

18. The method of claim 17, wherein the upper electric conduction plate is disposed below the plurality of pairs of 4-pole structures.

19. The method of claim 17, wherein the upper electric conduction plate is disposed above the plurality of pairs of 4-pole structures.

20. The method of claim 19, further comprising:
providing a lower electric conduction plate disposed below the plurality of pairs of 4-pole structures.

21. The method of claim 20, wherein the charged particle source is an electron source, and the charged particle beam is an electron beam.

22. A source-conversion unit, comprising:
an image-forming means comprising:
an upper layer with a plurality of upper 4-pole structures, and
a lower layer with a plurality of lower 4-pole structures,
wherein the plurality of upper 4-pole structures are aligned with the plurality of lower 4-pole structures to function as at least one of a micro-deflector to deflect a beamlet of charged particles, a micro-lens to focus the beamlet, and a micro-stigmator to add a desired amount of astigmatism aberration to the beamlet.