CLAIMS:

1. A charged particle beam apparatus to inspect a sample, the apparatus comprising:

a charged particle source configured to emit a charged particle beam along a primary optical axis;

a source conversion unit comprising:

an aperture-lens forming electrode plate configured to be at a first voltage;

an aperture lens plate comprising a plurality of apertures and configured to be at a second voltage that is different from the first voltage for generating a first electric field, which enables the aperture-lens forming electrode plate and the aperture lens plate to form a plurality of aperture lenses of an aperture lens array to respectively focus a plurality of beamlets of the charged particle beam; and

an imaging lens configured to focus the plurality of beamlets on an image plane, wherein the imaging lens is downstream of the aperture lens array;

an objective lens configured to focus the plurality of beamlets onto a surface of the sample and form a plurality of probe spots thereon; and

a controller configured to supply the first voltage to the aperture-lens forming electrode plate and the second voltage to the aperture lens plate.

2. The charged particle beam apparatus of claim 1, wherein the imaging lens has a principal plane perpendicular to the primary optical axis.

3. The charged particle beam apparatus of claim 2, wherein the principal plane of the imaging lens is movable along the primary optical axis.

4. The charged particle beam apparatus of claim 1, wherein the objective lens has a principal plane perpendicular to the primary optical axis.

5. The charged particle beam apparatus of claim 4, wherein the principal plane of the objective lens is movable along the primary optical axis.

6. The charged particle beam apparatus of claim 1, wherein the sample is movable

along the primary optical axis.

7. The charged particle beam apparatus of claim 4, wherein a pitch of the plurality of probe spots can be changed by moving at least one of the principal plane of the imaging lens, the principal plane of the objective lens, or the sample.

8. The charged particle beam apparatus of claim 1, wherein the source conversion unit further comprises a beam-limit aperture array configured to limit currents of the plurality of beamlets.

9. The charged particle beam apparatus of claim 8, wherein the beam-limit aperture array is disposed in and is movable in a plane perpendicular to the primary optical axis.

10. The charged particle beam apparatus of claim 8, wherein the beam-limit aperture array comprises a plurality of beam limiting apertures, and at least two beam limiting apertures of the plurality of beam limiting apertures are dissimilar in size.

11. The charged particle beam apparatus of claim 8, wherein the beam-limit aperture array is configured to be at a third voltage for generating a second electric field between the aperture lens plate and the beam-limit aperture array.

12. The charged particle beam apparatus of claim 1, wherein the aperture-lens forming electrode plate is positioned between the charged particle beam source and the aperture lens plate.

13. The charged particle beam apparatus of claim 1, wherein the aperture-lens forming electrode plate comprises an opening configured to allow passage of a portion of the charged particle beam.

14. A non-transitory computer readable medium storing a set of instructions that is executable by one or more processors of a charged particle beam apparatus to cause the charged particle beam apparatus to perform a method of inspecting a sample, the method comprising:

activating a charged particle source to generate a charged particle beam; and

supplying a first voltage to an aperture-lens forming electrode plate and second voltage to an aperture lens plate comprising a plurality of apertures, wherein the second voltage is different from the first voltage for generating a first electric field, so as to form a plurality of aperture lenses of an aperture lens array to respectively focus a plurality of beam lets of the charged particle beam, wherein the plurality of beamlets are focused, using an imaging lens downstream of the aperture lens array, on an imaging plane to form a plurality of images that are projected onto a surface of the sample to generate a plurality of probe spots.