WHAT IS CLAIMED IS:

1. A laser processing method of a wafer in which a wafer having a device in each of regions marked out by a plurality of planned dividing lines set on a surface in a lattice manner is processed by using a laser processing apparatus including a laser beam irradiation unit having a laser beam oscillator that oscillates a pulse laser beam with such a wavelength as to be absorbed by the wafer, a laser beam splitting unit, and a collecting lens and having a function of irradiating, through the collecting lens, the wafer held by a chuck table with a plurality of laser beams formed by being oscillated by the laser beam oscillator and being split by the laser beam splitting unit, the laser processing method comprising:

a holding step of holding the wafer by the chuck table; and

a processed groove forming step of simultaneously irradiating the wafer with the plurality of laser beams along the planned dividing line and forming a processed groove along the planned dividing line in the wafer,

wherein, in the processed groove forming step, the plurality of laser beams split by the laser beam splitting unit are arranged in a single line along a direction that is non-parallel to an extension direction of the planned dividing line irradiated with the plurality of laser beams, and wherein at least two of said plurality of laser beams are shifted from each other on the wafer.

2. The laser processing method of a wafer according to claim 1, wherein in the processed groove forming step, the wafer is irradiated with the plurality of laser beams along each of the plurality of planned dividing lines two or more times and the wafer is divided by the processed grooves.

3. The laser processing method of a wafer according to claim 1, wherein at least two of said plurality of laser beams are shifted in a direction perpendicular to a processing feed direction of the wafer.

4. The laser processing method of a wafer according to claim 1, wherein said at least two of said plurality

of laser beams are shifted by a distance in a range of 0.5 μm to 1 μm.

5. The laser processing method of a wafer according to claim 1, wherein the processed groove forming step includes adjusting a position of said plurality of laser beams so that the devices in the regions are not irradiated with a first laser beam or a last laser beam of said plurality of laser beams.

6. The laser processing method of a wafer according to claim 5, wherein said first laser beam and said last laser beam are shifted by a distance in a range of 5.0 μm to 6.0 μm from an adjacent laser beam of said plurality of laser beams.

7. The laser processing method of a wafer according to claim 5, wherein said first laser beam and said last laser beam are shifted by a distance in a range of 3.0 μm to 7.0 μm from an adjacent laser beam of said plurality of laser beams.

8. The laser processing method of a wafer according to claim 1, wherein said at least two of said plurality

of laser beams are shifted from each other when viewed from an upper surface of the wafer.

9. The laser processing method of a wafer according to claim 1, further comprising generating another laser beam having a power that is less than a power of the plurality of laser beams.