WHAT IS CLAIMED IS:

1. A laser processing method of processing a workpiece by applying a pulsed laser beam having a wavelength absorbable by the workpiece to the workpiece, the laser processing method comprising:

a holding step of holding the workpiece on a holding table;

a processing step of processing the workpiece by applying the pulsed laser beam to an upper surface of the workpiece held on the holding table;

an image capturing step of capturing an image of the upper surface of the workpiece at a predetermined timing in the processing step, thereby acquiring an image of an irradiated area of the upper surface that is irradiated with the pulsed laser beam;

a detecting step of detecting at least either one of a size and a position of the irradiated area that is brighter than other areas of the upper surface, in the image acquired in the image capturing step; and

a calculating step of repeating the image capturing step and the detecting step in the processing step on a plurality of different areas of the workpiece or performing the image capturing step and the detecting step in the processing step on each of a plurality of the

workpieces, calculating a variation of at least either one of the size and the position of the irradiated area detected in each of the detecting steps, and the variation of the size or the position of the irradiated area is quantitatively assessed in the calculating step.

2. The laser processing method according to claim 1, further comprising:

a warning step of issuing a warning when the variation, calculated in the calculating step, of at least either one of the size and the position of the irradiated area exceeds a preset threshold value.

3. The laser processing method according to claim 1, wherein the detecting step further comprises

measuring a length in predetermined direction of a target to be measured and additionally calculating coordinates of edges of the target to be measured.

4. A laser processing apparatus for processing a workpiece by applying a pulsed laser beam having a wavelength absorbable by the workpiece to the workpiece, the laser processing apparatus comprising:

a holding table for holding the workpiece;

an image capturing unit capturing an image of the workpiece held on the holding table;

a laser beam applying unit applying the pulsed

laser beam;

a detecting section for detecting at least either one of a size and a position of an irradiated area of an upper surface of the workpiece which is irradiated with the laser beam applied by the laser beam applying unit, in the image of the irradiated area captured by the image capturing unit at a predetermined timing while the workpiece is being processed by the pulsed laser beam applied to the upper surface of the workpiece held on the holding table by the laser beam applying unit, the irradiated area being brighter than other areas of the upper surface of the workpiece; and

a calculating section for calculating a variation of at least either one of the size and the position of the irradiated area detected by the detecting section, and the variation of the size or the position of the irradiated area is quantitatively assessed.

5. The laser processing apparatus according to claim 4, wherein the detecting section measures a length in predetermined direction of a target to be measured and additionally calculates coordinates of edges of the target to be measured.

6. The laser processing method according to claim 1 or 2, wherein in the calculating step, an index of the

variation used is a standard deviation or a dispersion.

7. The laser processing apparatus according to claim 4, wherein, for calculating the variation, an index of the variation used is a standard deviation or a dispersion.

8. The laser processing apparatus according to claim 4 or 7, wherein the calculating section calculates the variation with respect to elapsed time from a start of laser processing operation.