CLAIMS

1. A focusing and leveling device for calculating an amount of defocus and/or tilt of a substrate, comprising an illumination unit, a projection-side mark plate with a projection-side slit mark, a projection-side imaging group, a deflection prism, a beam splitter, a detection unit and a signal processing unit, the illumination unit configured to emit a light beam which passes through the projection-side mark plate and is thus trimmed into a probe beam, the projection-side imaging group configured to direct the probe beam onto a surface of the substrate, the deflection prism configured to deflect the probe beam that has been reflected by the surface of the substrate for a first time so that the probe beam is again incident on the surface of the substrate and reflected by the surface of the substrate for a second time onto the projection-side imaging group, the beam splitter configured to direct the probe beam that has been reflected by the surface of the substrate for the second time directly onto the detection unit, the signal processing unit configured to calculate the amount of defocus and/or tilt of the surface of the substrate based on a measurement spot detected by the detection unit; wherein an angle between an optical axis of the projection-side imaging group and the surface of the substrate is as same as an angle between a vertical line of an inclined face of the deflection prism and the surface of the substrate.

2. The focusing and leveling device of claim 1, wherein the deflection prism has a cross section of an isosceles right triangle.

3. The focusing and leveling device of claim 2, wherein the inclined face of the deflection prism is perpendicular to an optical axis of the probe beam that has been reflected by the surface of the substrate for the first time, and an intersection edge of two right-angle faces of the deflection prism intersects the optical axis of the probe beam that has been reflected by the surface of the substrate for the first time.

4. The focusing and leveling device of claim 1, wherein the projection-side

imaging group comprises a front lens group and a rear lens group, the beam splitter disposed between the projection-side mark plate and the front lens group, wherein the probe beam that has exited the beam splitter travels sequentially through the front lens group and the rear lens group and is then incident on the surface of the substrate, and wherein the probe beam that has been reflected by the surface of the substrate for the second time travels sequentially through the rear lens group and the front lens group and is then reflected by the beam splitter onto the detection unit.

5. The focusing and leveling device of claim 1, wherein the projection-side imaging group comprises a front lens group, a mirror pair and a rear lens group, the beam splitter disposed between the mirror pair and the rear lens group, wherein the probe beam travels sequentially through the front lens group, the mirror pair, the beam splitter and the rear lens group and is then incident on the surface of the substrate, and wherein subsequent to the reflection on the surface of the substrate for the second time, the probe beam again propagates through the rear lens group and is then reflected by the beam splitter onto the detection unit.

6. The focusing and leveling device of claim 1, 4 or 5, further comprising a detection-side lens group disposed upstream of the detection unit along a direction of propagation of the light beam.

7. The focusing and leveling device of claim 1, wherein the detection unit comprises: a detection-side mark plate with a detection-side slit mark; and an optical energy detector, the optical energy detector configured to measure a change in optical energy that has propagated through the detection-side slit mark, which serves as a basis for calculating the amount of defocus and/or tilt of the surface of the substrate.