Claims

1. Device (2) for measuring imaging properties of an optical system (4), wherein the device (2) comprises:
a test-object holder (6), which is configured to position the optical system (4) to be tested at a predefined testing position, a rigid holding device (8), and a plurality of MTF measuring devices (20), the device being configured for the plurality of MTF measuring devices (20) to be arranged at firmly predefinable positions of the holding device (8) such that, by means of each of the MTF measuring devices (20), a modulation transfer function can be measured at respective different, likewise firmly predefinable, angular positions in the image field of the optical system (4), characterized in that
the holding device (8) comprises at least a first and a second holder (10, 12), and the plurality of MTF measuring devices (20) comprises a first and a second group of MTF measuring devices (20), wherein
the first holder (10) is configured to hold the MTF measuring devices (20) of the first group at first positions so that the MTF measuring devices (20) of the first group are arranged on a first spherical shell,
the second holder (12) is configured to hold the MTF measuring devices (20) of the second group at second positions so that the MTF measuring devices (20) of the second group are arranged on a second spherical shell, wherein
the first and the second spherical shells have different radii and are arranged so as to be mutually concentric.

2. Device (2) according to claim 1, configured for the MTF measuring devices (20) to be arranged on the holding device (8) in such a way that the optical axes of the MTF measuring devices (20) intersect in a plane of an aperture of the optical system (4) to be tested.

3. Device (2) according to either claim 1 or 2, characterized in that the holding device (8) comprises a third holder (40) and the plurality of MTF measuring

devices comprises the first and second group and additionally a third group of MTF measuring devices, wherein the third holder (40) is configured to hold the MTF measuring devices of the third group at third positions so that the MTF measuring devices of the third group are arranged on a third spherical shell, wherein the third spherical shell has a third radius that is different from the first and second radii and is arranged so as to be concentric to the first and second spherical shell.

4. Device (2) according to any of claims 1 to 3, configured for the first radius of the first spherical shell to be greater than the second radius of the second spherical shell, and in particular the second radius of the second spherical shell to be greater than the third radius of the third spherical shell, such that the MTF measuring devices (20) of the first group have in each case a greater distance from the optical system (4) to be tested than the MTF measuring devices (20) of the second group, and in particular the MTF measuring devices (20) of the second group have in each case a greater distance from the optical system (4) to be tested than the MTF measuring devices (20) of the third group.

5. Device (2) according to any of claims 1 to 4, configured, for all the MTF measuring devices (201) of the first group, a first lateral angle (α1) between an optical axis (263) of the optical system (4) to be tested and an optical axis (261) of the MTF measuring device (201) to be smaller than a second lateral angle (α2) between the optical axis (263) of the optical system (4) to be tested and an optical axis (262) of any MTF measuring device (202) of the second group, and in particular for all the MTF measuring devices (202) of the second group a second lateral angle between an optical axis (262) of the optical system (4) to be tested and an optical axis of the MTF measuring device to be smaller than a lateral angle between the optical axis (263) of the optical system (4) to be tested and an optical axis of any MTF measuring device of the third group.

6. Device (2) according to any of claims 1 to 5, configured for a lateral angle between two adjacently arranged MTF measuring devices (20) of the first group to be smaller than a lateral angle between two adjacently arranged MTF measuring devices (20) of the second group, and in particular the second lateral angle to be smaller than a third lateral angle between two adjacently arranged MTF measuring devices of the third group.

7. Device (2) according to any of claims 1 to 6, configured for the holders (10, 12) of the holding device (8) to extend, at least in portions, along the corresponding spherical shell.

8. Device (2) according to any of claims 1 to 7, characterized in that the first holder (10) is configured as a spherical cap, and the second and/or the third holder (12, 40) is/are configured as a spherical cap having a central opening (16), wherein in particular the second and/or the third holder (12, 40) is/are annular, and wherein more particularly the second and/or the third holder (12, 40) is/are configured in the form of a spherical zone.

9. Device (2) according to any of claims 1 to 8, characterized in that the first holder (10) is configured as a spherical cap and the second and/or the third holder (12, 40) is/are configured in each case as at least one bracket (30), wherein the device is configured for the brackets (30) in each case to be fastened to the first holder (10) at a first end (34) close to the first holder (10) and to extend along great circles of the first or second spherical shell in the direction of a distal free end (36), and for the great circles to extend within planes that intersect along an optical axis of the optical system (4) to be tested.

10. Device (2) according to any of claims 1 to 9, characterized in that the holders (10) of the holding device (8) are configured in such a way that a displacement of the MTF measuring devices (20) on the associated spherical shell is possible.

11. Method for measuring imaging properties of an optical system (4) using a device (2) according to any of claims 1 to 10, comprising the following steps: arranging the optical system (4) to be tested in the test-object holder (6), simultaneously carrying out MTF measurements using all the MTF measuring devices (20).