WHAT IS CLAIMED IS:

1. A displacement planetary carrier system, characterized in that consisting of an elastic planetary carrier (1), a rigid tapered sleeve (2) and a rigid tapered sleeve axial adjustment mechanism (3); wherein

the elastic planetary carrier (1) is a planetary carrier in which part of an inner surface of a side wall is processed into tapered surfaces, the elastic planetary carrier (1) comprises first spaces (107) for containing planetary gears (4), a shaft or shaft hole for mounting the planetary gear (4) is formed in at least one axial end of each first space (107), staggered notches (103) are processed in the side wall, except for the first spaces (107), of the elastic planetary carrier (1), and the notches (103) are used for elastically increasing a perimeter of the side wall of the elastic planetary carrier (1) during force bearing, so that the elastic planetary carrier (1) elastically deforms;

the rigid tapered sleeve (2) is sleeved within the elastic planetary carrier (1), and tapered surfaces that match with the tapered surface of the inner surface of the side wall of the elastic planetary carrier (1) are processed on at least part of an outer side wall of the rigid tapered sleeve (2), so that the outer surface, processed with the tapered surfaces, of the rigid tapered sleeve (2) is in close fit with the inner surface, processed with the tapered surface, of the side wall of the elastic planetary carrier (1); and

the rigid tapered sleeve axial adjustment mechanism (3) is axially mounted on an adjusting bolt/nut or elastic element at an end portion of the elastic planetary carrier (1) and/or the rigid tapered sleeve (2) and used to apply axial force directed towards a minor diameter of the rigid tapered sleeve (2) to the rigid tapered sleeve (2), the planetary gears (4) arranged in the elastic planetary carrier (1) expand outward and press against inner gear rings (11) that mesh with the same by axially pushing, by the rigid tapered sleeve axial adjustment mechanism (3), the rigid tapered sleeve (2) to expand the elastic planetary carrier (1), so as to increase orbital radii of the planetary gears (4), thereby eliminating backlashes or applying gear surface prepressure between the planetary gears (4) and the inner gear rings (11).

2. The displacement planetary carrier system according to claim 1, characterized in that at least one pair of staggered notches (103) in an axial direction or radial direction of the elastic planetary carrier (1) are processed in the side wall, provided with the tapered surface, of the elastic planetary carrier (1), the two staggered notches (103) are opposite, and depth sum of each pair of staggered notches (103) are greater than wall thicknesses before the notches (103) are processed in notch positions of the elastic planetary carrier (1).

3. The displacement planetary carrier system according to claim 1, characterized in that second spaces (201) matched with the first spaces (107) are further arranged on the side wall of the rigid tapered sleeve (2) and used for containing the planetary gears (4) and/or sun gears (5).

4. The displacement planetary carrier system according to claim 1, characterized in that the rigid tapered sleeve axial adjustment mechanism (3) is an elastic leaf, an outer edge of the elastic leaf is fixed to an end face of the elastic planetary carrier (1) through a screw, an inner edge of the elastic leaf makes contact with a major diameter end face of the rigid tapered sleeve (2), and pressure towards the minor diameter of the rigid tapered sleeve (2) is generated to the rigid tapered sleeve (2) through elastic force of the elastic leaf.

5. The displacement planetary carrier system according to claim 1, characterized in that a limiting mechanism is further arranged and used for limiting the rigid tapered sleeve (2) and the elastic planetary carrier (1) to circumferentially rotate relative to each other.

6. The displacement planetary carrier system according to claim 4, characterized in that at least one protrusion or groove is formed in the major diameter end face of the rigid tapered sleeve (2) as a limiting mechanism, and a groove or protrusion corresponding to the limiting mechanism is arranged at a corresponding position of the elastic leaf and clamped with the protrusion or groove of the rigid tapered sleeve (2), so as to limit the rigid tapered sleeve (2) and the elastic planetary carrier (1) to circumferentially rotate relative to each other.

7. The displacement planetary carrier system according to claim 4, characterized in that a taper angle of the rigid tapered sleeve (2) ranges from 6° to 12°, so as to achieve a self-locking effect.

8. The displacement planetary carrier system according to claim 1, characterized in that the rigid tapered sleeve axial adjustment mechanism (3) is an adjusting nut, an external thread matched with the adjusting nut is processed on a minor diameter end portion of the rigid tapered sleeve (2), the adjusting nut is screwed into the external thread of the rigid tapered sleeve (2), so as to compress the end face of the elastic planetary carrier (1), and tension towards the minor diameter of the rigid tapered sleeve (2) is generated to the rigid tapered sleeve (2) by means of tension of the adjusting nut.

9. The displacement planetary carrier system according to claim 1, characterized in that the elastic planetary carrier (1) comprises an annular supporting top plate (105) and an annular supporting bottom plate (102), both of which are symmetrically arranged, a plurality of planetary carrier supporting columns (104) are arranged on an upper surface of the supporting bottom plate (102), and the annular supporting top plate (105) is arranged at tops of the planetary carrier supporting columns (104); tapered surfaces are processed on inner surfaces of the planetary carrier supporting columns (104), the annular supporting top plate (105) and the annular supporting bottom plate (102) respectively; and a pair of staggered notches (103) in the radial direction of the elastic planetary carrier (1) are processed at a position, on each planetary carrier supporting column (104), of the planetary carrier (4).

10. A planetary transmission device, characterized in that a planetary carrier in the planetary transmission device is the displacement planetary carrier system (8) according to any one of claims 1-9, the planetary transmission device is a 3K type planetary transmission device, planetary gears of the planetary transmission device expand outward and press against inner gear rings of the planetary transmission device by axially pushing, by the rigid tapered

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sleeve axial adjustment mechanism (3), the rigid tapered sleeve (2) to expand the elastic planetary carrier (1), so as to increase orbital radii of the planetary gears (4), thereby eliminating backlashes or applying gear surface prepressure between the planetary gears (4) and the inner gear rings (11).

11. A planetary transmission device, characterized in that a planetary carrier in the planetary transmission device is the displacement planetary carrier system (8) according to any one of claims 1-9, the planetary transmission device is a 3K type planetary transmission device without a sun gear, and the displacement planetary carrier system (8) of the planetary transmission device serves as an input end; and planetary gears of the planetary transmission device expand outward and press against inner gear rings (11) of the planetary transmission device by axially pushing, by the rigid tapered sleeve axial adjustment mechanism (3), the rigid tapered sleeve (2) to expand the elastic planetary carrier (1), so as to increase orbital radii of the planetary gears (4), thereby eliminating backlashes or applying gear surface prepressure between the planetary gears (4) and the inner gear rings (11).

12. A planetary transmission device, characterized in that a planetary carrier in the planetary transmission device is the displacement planetary carrier system (8) according to any one of claims 1-9, the planetary transmission device is further provided with an additional sun gear (55) and at least two additional third planetary gears (14) on the basis of a 3K type planetary transmission device without a sun gear (5), the additional sun gear (55) and the third planetary gears (14) are in engaged transmission to drive the third planetary gears (14) to auto-rotate, each third planetary gear (14) and one planetary gear (4) of the planetary transmission device are coaxially mounted and relatively fixed, and the additional sun gear (55) of the planetary transmission device serves as an input end; and planetary gears (4) of the planetary transmission device expand outward and press against inner gear rings (11) of the planetary transmission device by axially pushing, by the rigid tapered sleeve axial adjustment mechanism (3), the rigid tapered sleeve (2) to expand the elastic planetary carrier (1), so as to increase orbital radii of the planetary gears (4), thereby eliminating backlashes or applying gear surface prepressure between the planetary gears (4) and the inner gear rings (11).

13. A planetary transmission device, characterized in that a planetary carrier in the planetary transmission device is the displacement planetary carrier system (8) according to any one of claims 1-9, the planetary transmission device is a 2K-H type planetary transmission device with an inner gear ring (11), a planetary gear (4) of the planetary transmission device expands outward and presses against the inner gear ring (11) of the planetary transmission device by axially pushing, by the rigid tapered sleeve axial adjustment mechanism (3), a rigid tapered sleeve (2) to expand the elastic planetary carrier (1), so as to increase an orbital radius of the planetary gear (4), thereby eliminating a backlash or applying gear surface prepressure between the planetary gear (4) and the inner gear ring (11).