Claims

1. A fiber assembly (1) for transmitting laser beams (L) for a fiber laser of a laser weapon, the fiber assembly comprising at least one first fiber section (3), in particular a first fiber, and at least one second fiber section (5), in particular a second fiber, wherein: the fiber sections (3, 5) are each designed as optical waveguides, the first fiber section (3) is optically connected, in particular spliced, to the second fiber section (5) for transmitting laser beams (L), the first fiber section (3) has an in particular first doped fiber core (11), has a first fiber sheath (12) encompassing the fiber core (11) and comprising a first cladding (13), and is designed and configured to generate laser radiation (L) in the first fiber core (11) by means of coupled-in pump radiation (P) from a pump radiation source (25) and to transfer said laser radiation into the second fiber section (5); the second fiber section (5) is designed and configured to guide laser radiation (L) along a longitudinal extent of the second fiber section (5), **characterized in that** the second fiber section (5), at least at its end (9) facing away from the first fiber section (3), has a smaller diameter than the first fiber section (3).

2. The fiber assembly (1) according to claim 1, wherein the fiber assembly (1) has a third fiber section, in particular of a third fiber, that is connected to the second fiber section (5) at the end (9) thereof facing

away from the first fiber section (3) in order to transmit the laser beams (L).

3. The fiber assembly (1) according to at least one of the preceding claims, wherein the second fiber section (5) has an in particular second doped fiber core (15) and an in particular second fiber sheath (16) encompassing the second fiber core (15) and comprising a second cladding (16).

4. The fiber assembly (1) according to at least one of the preceding claims, wherein the second fiber section (5) has, at a connection interface with the first fiber section (3), a larger diameter than at the opposite end (9) facing away from the first fiber section (3), in particular in that the second cladding (16) of the second fiber section (5) is thinner at the opposite end (9) facing away from the first fiber section than at the connection interface.

5. The fiber assembly (1) according to at least one of the preceding claims, wherein the diameters of the first fiber section (3) and of the second fiber section (5) are equal at the connection interface, and wherein the diameter of the second fiber section (5), starting from the connection interface in the direction of the end (9) facing away from the first fiber section (3), tapers in particular continuously and/or steadily.

6. The fiber assembly (1) according to at least one of the preceding claims, wherein the fiber assembly (1) has an in particular conical tapering section (7) in which a diameter tapers from a first value to a second value, wherein the first value preferably corresponds to a

diameter of the first fiber section (3) and the second value corresponds to a diameter of the second fiber section (5).

7. The fiber assembly (1) according to at least one of the preceding claims, wherein the fiber assembly (1) has a plurality of first fiber sections (3) and a plurality of second fiber sections (5), wherein the second fiber sections (5) are arranged, in particular fixed, at a center-to-center spacing (A) relative to a particular adjacent second fiber section (5) that is smaller than a diameter of the fiber sheath (12) of the first fiber section (3), and wherein the plurality of first fiber sections (3) and/or the plurality of second fiber sections (5) are preferably arranged as a fiber array.

8. The fiber assembly (1) according to at least one of the preceding claims, wherein the second and/or third fiber section – along a center axis (M) of the respective fiber – has a curved course, in particular in such a way that the fiber cores (15) of two of the plurality of second and/or third fiber sections are closer together than the fiber cores (11) of two of the first fiber sections.

9. The fiber assembly (1) according to at least one of the preceding claims, wherein the first fiber sections (3) are arranged, in particular fixed, at a center-to-center spacing (A) relative to a particular adjacent first fiber section (3) that is greater than the center-to-center spacing (A) of the second and/or third fiber sections.

10. The fiber assembly (1) according to at least one of the preceding claims, wherein the diameter (D2) of the second and/or third fiber section at its end (9) facing away from the first fiber section (3) is less than 0.3 mm, preferably less than 0.2 mm, preferably less than 0.1 mm, preferably less than 0.05 mm, and wherein the diameter (D1) of the first fiber section (3) is, at least in sections, at least 0.3 mm, preferably at least 0.4 mm.

11. The fiber assembly (1) according to at least one of the preceding claims, wherein the second fiber section (5) or the third fiber section is fastened, preferably at its end facing away from the first fiber section (3), to an optically transparent fixing element (21), in particular a glass body.

12. The fiber assembly (1) according to at least one of the preceding claims, wherein the plurality of first fiber sections (3) is designed and configured to generate laser radiation (L) having respectively different wavelengths.

13. A HEL effector (24) for a laser weapon, comprising a fiber assembly (1) according to one of the preceding claims, a beam combining device (23) that comprises a transformation optics device (27) and an optical grating (29), and the pump radiation source (25) that is connected to the at least one first fiber section (3), in particular the plurality of first fiber sections (3), for coupling in the pump radiation (P), wherein the transformation optics device (27) is arranged in a beam path of the laser beams (L) downstream of the optically

transparent fixing element (21), wherein the transformation optics device (27) is designed and configured to direct the incident laser beams (L), in particular in collimated form, onto the optical grating (29).

14. A laser weapon comprising a fiber assembly (1) according to one of the preceding claims and/or a HEL effector (24) according to one of the preceding claims, wherein the laser weapon has a target detection device for detecting a target object and preferably a control device for controlling the target detection device and/or for actuating a bundled laser beam.

15. The laser weapon according to claim 14, wherein the HEL effector (24) is designed and configured to combine a plurality of laser beams of the fiber assembly (1) into a bundled laser beam having a total power of at least 5 kW, preferably at least 10 kW, preferably at least 20 kW, preferably at least 50 kW, preferably at least 80 kW, preferably at least 100 kW.