CLAIMS

1. A system, comprising:

a radiation source;

one or more beam-directing elements; and

a controller, configured to:

display a live sequence of images of an eye of a patient;

while displaying the sequence of images, cause the radiation source to emit one or more aiming beams at the beam-directing elements such that the aiming beams are directed, by the beam-directing elements, toward an eye of a patient, wherein the aiming beams are visible in the images,

verify that each of the aiming beams is properly directed by the beam-directing elements by processing a feedback signal from an encoder for the beam-directing elements,

subsequently to causing the radiation source to emit the aiming beams, receive a confirmation input from a user, and

in response to verifying that each of the aiming beams is properly directed by the beam-directing elements and to receiving the confirmation input, treat the eye by causing the radiation source to irradiate one or more target regions of the eye with respective treatment beams.

2. The system according to claim 1, further comprising a focusing lens,

wherein the controller is configured to cause the radiation source to irradiate the target regions of the eye by firing the treatment beams at the beam-directing elements through the focusing lens, such that the treatment beams are focused by the focusing lens prior to being directed, by the beam-directing elements, toward the respective target regions.

3. The system according to any one of claims 1-2, wherein a respective one of the aiming beams impinges on at least part of each of the target regions.

4. The system according to any one of claims 1-3, further comprising a camera configured to acquire a sequence of images while the aiming beams are emitted, wherein the aiming beams are visible in the images.

5. The system according to claim 4, wherein the controller is further configured to superimpose a marker on each of the images, and wherein the controller is configured to verify that each of the aiming beams is properly directed by the beam-directing elements by processing the images so as to verify respective positions of the aiming beams with respect to the marker.

6. The system according to claim 5, wherein the controller is configured to verify the respective positions of the aiming beams by verifying that the aiming beams overlap the marker.

7. The system according to claim 5, wherein the controller is configured to verify the respective positions of the aiming beams by verifying that the aiming beams lie outside the marker.

8. The system according to any one of claims 5-7, wherein the controller is configured to treat the eye such that respective edges of the treatment beams impinge on respective portions of the eye over which the marker is superimposed.

9. The system according to any one of claims 5-8, wherein the marker is elliptical.

10. The system according to any one of claims 5-9,

wherein the controller is further configured to:

prior to causing the radiation source to emit the aiming beams, display a still image of the eye, and

identify an elliptical portion of the eye in the still image, based on input from the user, and

wherein the controller is configured to, in response to identifying the elliptical portion of the eye, superimpose the marker over the elliptical portion of the eye in each of the images.

11. The system according to claim 10, wherein the controller is configured to superimpose the marker over the elliptical portion of the eye by:

subsequently to identifying the elliptical portion of the eye, identifying an offset from a center of a limbus of the eye to a center of the elliptical portion in the still image, and

for each image of the images:

identifying the center of the limbus in the image, and

superimposing the elliptical marker on the image such that the center of the elliptical marker is at the identified offset from the center of the limbus.

12. The system according to claim 10, wherein the controller is configured to identify the elliptical portion of the eye by:

displaying, over the still image, (i) the elliptical marker, and (ii) a rectangle circumscribing the elliptical marker, and

subsequently to displaying the elliptical marker and the rectangle, in response to the user adjusting the rectangle, adjusting the elliptical marker such that the elliptical marker remains circumscribed by the rectangle, until the elliptical marker is superimposed over the portion of the eye.

13. The system according to claim 12, wherein the controller is further configured to identify a limbus of the eye in the still image, and wherein the controller is configured to display the elliptical marker over the limbus.

14. The system according to any one of claims 1-3 or any one of claims 7-11, further comprising a camera configured to acquire a still image of the eye prior to the emitting of the aiming beams,

wherein the controller is further configured to:

based on the still image of the eye, identify a static region in a field of view of the camera that includes a pupil of the eye, and

treat the eye such that each of the treatment beams impinges on the eye outside the static region.

15. The system according to claim 14,

wherein the controller is configured to treat the eye by aiming the beam-directing elements at the target regions in sequence and causing the radiation source to fire the treatment beams at the beam-directing elements, and

wherein the controller is further configured to inhibit the beam-directing elements from being aimed at the static region even while none of the treatment beams is being fired.

16. The system according to any one of claims 14-15, wherein the controller is configured to identify the static region by:

receiving, from the user, a limbus-locating input indicating a location of the limbus in the still image, and

identifying the static region based on the location of the limbus.

17. The system according to claim 1, further comprising a camera configured to acquire multiple images of the eye,

wherein the controller is configured to treat the eye by performing an iterative process, each iteration of the process including:

using the camera, acquiring a different respective image of the images,

verifying a position of a different respective one of the target regions in the image, and

in response to verifying the position, firing a respective one of the treatment beams at the target region whose position was verified during the iteration.

18. The system according to claim 17, further comprising an illumination source, wherein the controller is further configured to cause the illumination source to intermittently flash visible light

at the eye such that the light illuminates the eye at least during respective acquisitions of the images.

19. The system according to claim 18, wherein a peak average intensity of the light over a duration of each of the flashes is between 0.003 and 3 mW/cm^2.

20. The system according to any one of claims 18-19, wherein the controller is configured to cause the illumination source to flash the light at a frequency of at least 60 Hz.

21. The system according to claim 20, wherein the frequency is at least 100 Hz.

22. The system according to claim 17, further comprising an illumination source, wherein the controller is further configured to cause the illumination source to illuminate the eye with near-infrared light at least during respective acquisitions of the images.

23. The system according to claim 22, wherein the controller is further configured to cause the illumination source to intermittently flash visible light at the eye while treating the eye.

24. The system according to any one of claims 1-23, further comprising an optical unit comprising the radiation source and a plurality of beam emitters,

wherein the controller is further configured to, prior to causing the radiation source to emit the aiming beams, cause the beam emitters to shine a plurality of range-finding beams on the eye, the range-finding beams being shaped to define different respective portions of a predefined composite pattern such that the predefined composite pattern is formed on the eye only when the optical unit is at a predefined distance from the eye.

25. The system according to claim 24, wherein the range-finding beams are shaped to define two perpendicular shapes, and wherein the predefined composite pattern includes a cross.

26. The system according to any one of claims 1-23, further comprising an optical unit comprising the radiation source, wherein the controller is configured to cause the radiation source to irradiate the target regions while the optical unit is directed obliquely upward toward the eye and the eye gazes obliquely downward toward the optical unit.

27. The system according to claim 26, further comprising a wedge, wherein the optical unit is directed obliquely upward toward the eye by virtue of being mounted on the wedge.

28. The system according to any one of claims 1-27, wherein the beam-directing elements comprise one or more galvo mirrors, and wherein the encoder is for the galvo mirrors.