CLAIMS

1. Apparatus comprising:

illumination equipment configured to direct light into an eye of a subject;

an optical device configured to be placed inside the subject's eye, the optical device comprising:

a Fabry Perot interferometer comprising at least two mirrors, the Fabry Perot interferometer being configured such that a distance between the mirrors varies as an intraocular parameter of the subject's eye varies; and

a retroreflector configured such that light that is transmitted through the Fabry Perot interferometer is automatically reflected out of the subject's eye; and

readout equipment configured to detect the light that is reflected out of the subject's eye.

2. The apparatus according to claim 1, wherein the apparatus is for use with an intraocular lens, and wherein the optical device is configured to be coupled to the intraocular lens.

3. The apparatus according to claim 1, wherein the apparatus is for use with an intraocular lens, and wherein the optical device is configured to be placed inside the subject's eye during a procedure in which the intraocular lens is placed in the subject's eye.

4. The apparatus according to claim 1, wherein the optical device is configured to be coupled to a ciliary body of the subject's eye.

5. The apparatus according to claim 1, wherein the Fabry Perot interferometer is configured such that the distance between the mirrors varies as intraocular pressure of the subject's eye varies.

6. The apparatus according to claim 1, wherein the Fabry Perot interferometer is configured such that the distance between the mirrors varies as intraocular temperature of the subject's eye varies.

7. The apparatus according to claim 1, wherein the optical device comprises two or more additional mirrors, such that the optical device acts as a plurality of Fabry Perot interferometers in cascade.

8. The apparatus according to any one of claims 1-7, further comprising a computer processor that is configured to analyze the light that is reflected out of the subject's eye such as to identify a resonance frequency of the Fabry Perot interferometer and to thereby determine the intraocular parameter of the subject's eye.

9. The apparatus according to claim 8, wherein the illumination equipment includes a swept monochromatic light source and wherein the computer processor is configured to identify the resonance frequency of the Fabry Perot interferometer by detecting a frequency of light that is reflected out of the subject's eye.

10. The apparatus according to claim 8, wherein the illumination equipment includes a polychromatic light source having known spectral characteristics, and wherein the computer processor is configured to identify the resonance frequency of the Fabry Perot interferometer based on the known spectral characteristics of the light source and a spectrum of the light that is reflected out of the subject's eye.

11. The apparatus according to claim 8, wherein the illumination equipment includes a broadband light source, and wherein the computer processor is configured to identify the resonance frequency of the Fabry Perot interferometer by analyzing the spectrum of the light that is reflected out of the subject's eye by means of Fast Fourier Transform, to detect a distance between peaks in the reflected signal.

12. The apparatus according to claim 8, wherein the readout equipment is configured to detect light that is reflected out of the subject's eye that is at a resonance frequency of the Fabry Perot interferometer when an optical axis of the readout equipment is parallel with an optical axis of the illumination equipment.

13. The apparatus according to any one of claims 1-7, further comprising a reference Fabry Perot interferometer comprising at least two reference mirrors, a distance between the reference mirrors being fixed as the intraocular parameter of the subject's eye varies.

14. The apparatus according to claim 13, wherein the reference Fabry Perot interferometer is in series with the Fabry Perot interferometer that is configured such that the distance between its mirrors varies as the intraocular parameter of the subject's eye varies.

15. The apparatus according to claim 13, further comprising a computer processor that is configured to analyze the light that is reflected out of the subject's eye and to account for changes in an angle between an optical axis of the optical device and an optical axis of the illumination equipment and/or the readout equipment, by calibrating measurements that are performed on light that is reflected from the Fabry Perot interferometer using measurements that are performed on light that is reflected from the reference Fabry Perot interferometer.

16. The apparatus according to claim 13, further comprising a reference optical device coupled to the optical device, the reference optical device comprising the reference Fabry Perot interferometer.

17. The apparatus according to claim 16, wherein the reference optical device is coupled to the optical device such that optical axes of the optical device and the reference optical device are parallel to each other.

18. The apparatus according to claim 16, wherein the reference optical device comprises a retroreflector configured such that light that is transmitted through the reference Fabry Perot interferometer is automatically reflected out of the subject's eye.

19. Apparatus comprising:

illumination equipment configured to direct light into an eye of a subject;

an optical device configured to be placed inside the subject's eye, the optical device comprising a first Fabry Perot interferometer comprising at least two mirrors, the interferometer being configured such that a distance between the mirrors varies as an intraocular parameter of the subject's eye varies;

a reference Fabry Perot interferometer comprising at least two reference mirrors, a distance between the reference mirrors being fixed as the intraocular parameter of the subject's eye varies; and

readout equipment configured to detect the light that is reflected out of the subject's eye.

20. The apparatus according to claim 19, wherein the reference Fabry Perot interferometer is in series with the first Fabry Perot interferometer.

21. The apparatus according to claim 19, wherein the first Fabry Perot interferometer is configured such that the distance between the mirrors varies as intraocular pressure of the subject's eye varies.

22. The apparatus according to claim 19, wherein the first Fabry Perot interferometer is configured such that the distance between the mirrors varies as intraocular temperature of the subject's eye varies.

23. The apparatus according to claim 19, wherein the optical device comprises two or more additional mirrors, such that the optical device acts as a plurality of Fabry Perot interferometers in series with each other.

24. The apparatus according to claim 19, wherein the optical device further comprises a retroreflector configured such that light that is transmitted through the first Fabry Perot interferometer is automatically reflected out of the subject's eye.

25. The apparatus according to any one of claims 19-24, further comprising a reference optical device coupled to the optical device, the reference optical device comprising the reference Fabry Perot interferometer.

26. The apparatus according to claim 25, wherein the reference optical device is coupled to the optical device such that optical axes of the optical device and the reference optical device are parallel to each other.

27. The apparatus according to claim 25, wherein the reference optical device comprises a retroreflector configured such that light that is transmitted through the reference Fabry Perot interferometer is automatically reflected out of the subject's eye.

28. The apparatus according to any one of claims 19-24, further comprising a computer processor that is configured to analyze the light that is reflected out of the subject's eye such as to identify a resonance frequency of the first Fabry Perot interferometer and to thereby determine the intraocular parameter of the subject's eye.

29. The apparatus according to claim 28, wherein the computer processor is configured to account for changes in an angle between an optical axis of the optical device and an optical axis of the illumination equipment and/or the readout equipment, by calibrating measurements that are performed on light that is reflected from the first Fabry Perot interferometer using measurements that are performed on light that is reflected from the reference Fabry Perot interferometer.

30. The apparatus according to claim 28, wherein the optical device further comprises a retroreflector configured such that light that is transmitted through the first Fabry Perot interferometer is automatically reflected out of the subject's eye.

31. The apparatus according to claim 30, wherein the illumination equipment includes a swept monochromatic light source and wherein the computer processor is configured to identify the resonance frequency of the first Fabry Perot interferometer by detecting a frequency of light that is reflected out of the subject's eye.

32. The apparatus according to claim 30, wherein the illumination equipment includes a polychromatic light source having known spectral characteristics, and wherein the computer processor is configured to identify the resonance frequency of the first Fabry Perot interferometer

based on the known spectral characteristics of the light source and a spectrum of the light that is reflected out of the subject's eye.

33. The apparatus according to claim 30, wherein the illumination equipment includes a broadband light source, and wherein the computer processor is configured to identify the resonance frequency of the first Fabry Perot interferometer by analyzing the spectrum of the light that is reflected out of the subject's eye by means of Fast Fourier Transform, to detect a distance between peaks in the reflected signal.

34. The apparatus according to any one of claims 19-24, wherein the readout equipment is configured to detect light that is reflected out of the subject's eye that is at a resonance frequency of the first Fabry Perot interferometer when an optical axis of the readout equipment is parallel with an optical axis of the illumination equipment.

35. A method comprising:

directing light into an eye of a subject;

receiving reflected light from an optical device that is placed inside the subject's eye, and that includes:

a Fabry Perot interferometer that includes at least two mirrors, the Fabry Perot interferometer being configured such that a distance between the mirrors varies as an intraocular parameter of the subject's eye varies, and

a retroreflector configured such that light that is transmitted through the Fabry Perot interferometer is automatically reflected out of the subject's eye; and

analyzing the reflected light to thereby determine the intraocular parameter of the subject's eye.

36. A method comprising:

placing an optical device inside an eye of a subject, the optical device including:

a Fabry Perot interferometer that includes at least two mirrors, the Fabry Perot interferometer being configured such that a distance between the mirrors varies as an intraocular parameter of the subject's eye varies, and

a retroreflector configured such that light that is transmitted through the Fabry Perot interferometer is automatically reflected out of the subject's eye.

37. A method comprising:

directing light into an eye of a subject;

receiving reflected light from an optical device that is placed inside the subject's eye, and that includes a first Fabry Perot interferometer that includes at least two mirrors, the Fabry Perot interferometer being configured such that a distance between the mirrors varies as an intraocular parameter of the subject's eye varies, and

receiving reflected light from a reference Fabry Perot interferometer that includes at least two reference mirrors, a distance between the reference mirrors being fixed as the intraocular parameter of the subject's eye varies; and

analyzing the reflected light from the first Fabry Perot interferometer and the reflected light from the reference Fabry Perot interferometer to thereby determine the intraocular parameter of the subject's eye.

38. A method comprising:

placing an optical device inside an eye of a subject, the optical device including a first Fabry Perot interferometer that includes at least two mirrors, the first Fabry Perot interferometer being configured such that a distance between the mirrors varies as an intraocular parameter of the subject's eye varies, and

placing inside the subject's eye a reference Fabry Perot interferometer that includes at least two reference mirrors, a distance between the reference mirrors being fixed as the intraocular parameter of the subject's eye varies.