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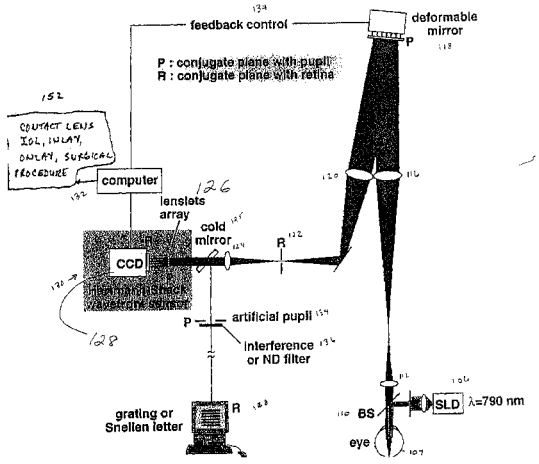
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(54) Title: IMPROVING VISION AND RETINAL IMAGING



(57) Abstract: A method for improving the visual performance of a person involves correcting higher-order monochromatic aberrations in combination with the correction of chromatic aberration. Such correction results in a visual benefit greater than that realized by correcting only the higher-order monochromatic aberrations or the chromatic aberration alone. The higher-order monochromatic aberrations are corrected by introducing appropriate phase profiles to compensate for the wavefront aberrations of the eye (107). This compensation can be provided by contact lenses (152), IOLs, inlays and onlays having appropriate surface shapes or by corneal shaping achieved through refractive surgery or other techniques. Chromatic aberration can be corrected by spectral filtering or artificial apodization. An apodization filter is described that provides a non-uniform amplitude transmission across the pupil of the eye. Contact lenses or other ocular devices for correcting higher-order monochromatic aberrations may include an appropriate apodization filter for correcting chromatic aberration, or an external optical device for correcting chromatic aberration may be used in combination with a contact lens, etc. for correcting the higher-order monochromatic aberrations. A device and method for improved retinal imaging is also described.

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