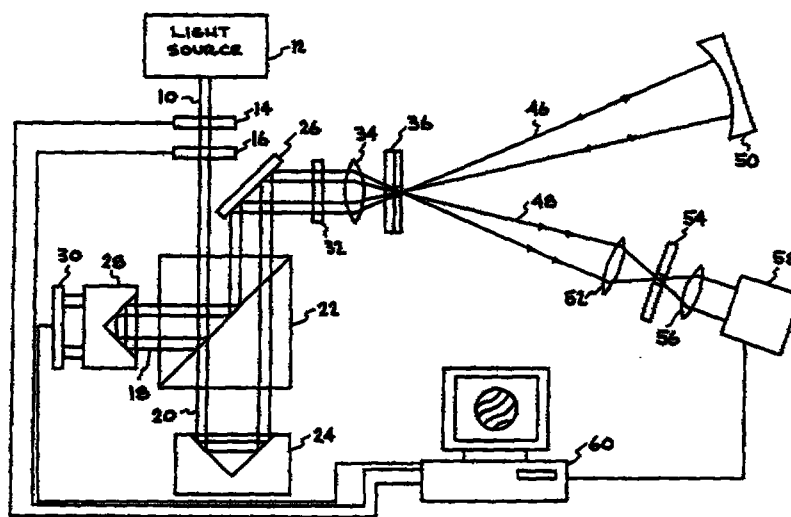


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(54) Title: PHASE SHIFTING DIFFRACTION INTERFEROMETER



(57) Abstract

An interferometer system in which a linearly polarized beam (10) from a light source (12) passes through a density filter (14). The beam (10) then passes through a half-wave retardation plate (16) which produces two orthogonally polarized beams. The angular orientation of the half-wave retardation plate (16) is used to adjust the relative intensity between the vertical and horizontal components of polarization. The polarized beams are then split by a polarization beamsplitter (22). The transmitted beam (20) is then reflected by a fixed retroreflector (24) back through the polarization beamsplitter (22) to a turning mirror (26). The reflected beam (18) is reflected, by a retroreflector (28), mounted on a piezoelectric transducer (30) back through the beamsplitter (22) to the same mirror so that it is parallel to the other beam but laterally displaced from it. It diverges and is coincident with the reference beam (48) which was diffracted by the aperture (42). The measurement beam (46) and the reference beam (48) interfere to produce a fringe pattern that represents a contour map of optical path difference between the wavefront from the optic (50) and a perfect spherical wavefront.