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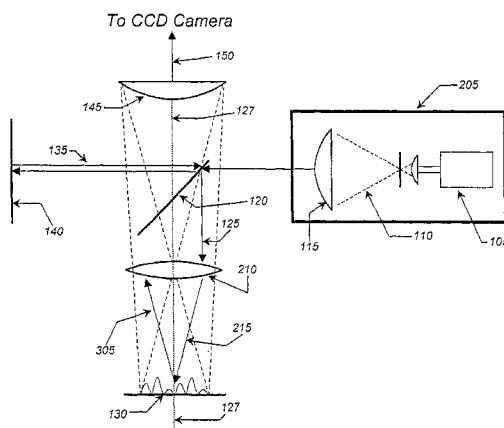
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(54) Title: DIRECT-TO-DIGITAL OFF-AXIS HOLOGRAPHY WITH OFF-AXIS ILLUMINATED OBJECT



(57) Abstract: Systems and methods are described for off-axis object illuminated direct-to-digital holography. A method of recording an off-axis illuminated spatially heterodyne hologram including spatially heterodyne fringes for Fourier analysis, includes: reflecting a reference beam (135) from a reference mirror (140) at a non-normal angle; reflecting an object beam (215) from an object (130) at an off-axis angle with respect to an optical axis defined by a focusing lens (145); focusing the reference beam and the object beam at a focal plane of a digital recorder to form the off-axis illuminated spatially heterodyne hologram including spatially heterodyne fringes for Fourier analysis; digitally recording the off-axis illuminated spatially heterodyne hologram including spatially heterodyne fringes for Fourier analysis; Fourier analyzing the recorded off-axis illuminated spatially heterodyne hologram including spatially heterodyne fringes by transforming axes of the recorded off-axis illuminated spatially heterodyne hologram including spatially heterodyne fringes in Fourier space to sit on top of a heterodyne carrier frequency defined as an angle between the reference beam and the object beam; applying a digital filter to cut off signals around an original origin; and then performing an inverse Fourier transform.



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