

INSTANTANEOUS DETECTION
OF THE COMPLEX AMPLITUDE
OF COHERENT OPTICAL WAVE FIELDS

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S u m m a r y

Conventional optical detectors such as CCDs, CMOS image sensors, or photographic films, being well-suited for the detection of high-quality images with a wide dynamic range of intensity variances, do not allow the detection of the complex amplitude of an optical wave field. Still the complete information on such fields is described not by its intensity, but by its complex amplitude. This paper is concerned with the instantaneous detection of the complex amplitude of an optical wave field by using an advanced phase-shifting interferometry technique. The proposed method allows the detection of the complete information on the optical wave field and the retrieval of its complex amplitude at an arbitrary position along its propagation path.