

ABSTRACT

METHOD AND APPARATUS TO CALIBRATE INTENSITY AND
DETERMINE FRINGE ORDER FOR INTERFEROMETRIC
MEASUREMENT OF SMALL SPACINGS

The apparatus and method for measuring a small spacing down to contact uses an interferometric fringe intensity calibration to calibrate maximum and minimum intensity of two or more monochromatic or quasi-monochromatic interference patterns caused by a spacing between two articles, one of which is transparent. The intensity calibration is done by measuring maximum and minimum fringe intensity of each color while altering the spacing by at least $\frac{1}{4}$ of the wavelength of the light or other electromagnetic radiation being used. The calibration by changing spacing allows the fringe order to be calculated for each wavelength of the radiation being used. This calibration procedure allows the maximum and minimum intensity of the radiation to be known, as well as the fringe order of the interference patterns to be calculated. With the maximum and minimum intensities and the fringe orders known, the spacing is readily calculated from interferometric theory.

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