Modified interferometric method for refractive index profile measurement of multi-elliptical core optical fibers

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Abstract

This paper presents a general interference formula described the interference pattern of multi-elliptical core optical fiber in a transverse interferometer. This formula with Mach-Zehnder interferometry is used to characterize multi-elliptical core optical fiber via its refractive index measurement. A CCD camera for further automatic processing and analysis captures the interference pattern of the output field of the Mach-Zehnder interferometer by the computer-aided system. This study gives possibility to analyze optical properties and possible optical and geometrical microdefects of multi-core optical fiber. Example of application to identical nine-elliptical core optical fiber of thickness 380 micrometer fibers is given.

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