Abstract

HIGH-BRIGHTNESS ILLUMINATION SOURCE FOR OPTICAL METROLOGY

An illumination source may include two or more input light sources, a collector, and any combination of a beam uniformizer, a speckle reducer, or any number of output fibers to provide a selected illumination etendue. The collector may include one or more lenses to combine illumination from the two or more input light sources into an illumination beam, where the illumination from the two or more input light sources occupy different portions of an input aperture of the collector. The beam uniformizer may include a first noncircular-core fiber to receive the illumination beam, a second noncircular-core fiber, and one or more coupling lenses to relay a far-field distribution of the illumination beam from the first noncircular-core fiber to an input face of the second noncircular-core fiber to provide output light with uniform near-field and far-field distributions.

Fig. 1