Abstracts

Theory of a Thermal-Gradient Gas Lens (1965 [MWSYM])

D. Marcuse. "Theory of a Thermal-Gradient Gas Lens (1965 [MWSYM])." 1965 G-MTT Symposium Program and Digest 65.1 (1965 [MWSYM]): 1-6.

A communcations system using a carrier at light frequencies requires a guiding medium to assure light propagation from transmitter to receiver. A periodic sequence of lenses can act as a waveguide if the lenses are properly spaced. Lenses made of a solid dielectric such as glass not only absorb some of the light in the dielectric medium itself but also inevitably scatter some of the light out of the beam at the interface between air and dielectric. Since many closely spaced lenses are required to guide the beam around intentional and accidental bends of the transmission path the loss of a lens-waveguide can become quite high. These losses can be avoided if instead of solid dielectrics gasses are used as lens material.

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