Abstracts

Optical heterodyne detection of millimeter-wave-band radio-on-fiber signals with a remote dual-mode local light source

T. Kuri and K. Kitayama. "Optical heterodyne detection of millimeter-wave-band radio-on-fiber signals with a remote dual-mode local light source." 2001 Transactions on Microwave Theory and Techniques 49.10 (Oct. 2001, Part II [T-MTT] (Special Issue on Microwave and Millimeter-Wave Photonics)): 2025-2029.

A novel technique for optical heterodyne detection of a millimeter-wave radio-on-fiber signal using a remote dual-mode local light is proposed. Although a free-running dual-mode local light is used, the proposed technique is in principle free from laser phase noise. Since only two components of the optical signal are selected by the local light to demodulate themselves, this technique is also theoretically immune from the fiber-dispersion effect, even if the transmitted optical signal is in the double-sideband format. We derive the theoretical limit of the system performance and then experimentally demonstrate a 25-km-long fiber-optic transmission and the optical heterodyne detection of a 59.6-GHz radio-on-fiber signal with 155.52-Mb/s differential-phase-shift-keying formatted data.

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