Abstracts

General expressions for IM/DD dispersive analog optical links with external modulation or optical up-conversion in a Mach-Zehnder electrooptical modulator

J.L. Corral, J. Marti and J.M. Fuster. "General expressions for IM/DD dispersive analog optical links with external modulation or optical up-conversion in a Mach-Zehnder electrooptical modulator." 2001 Transactions on Microwave Theory and Techniques 49.10 (Oct. 2001, Part II [T-MTT] (Special Issue on Microwave and Millimeter-Wave Photonics)): 1968-1976.

A general derivation of the optical modulation process in a dual-drive Mach-Zehnder modulator (DD-MZM) is introduced. The expressions include all harmonics and are entirely general in terms of bias point. Chromatic dispersion is also included allowing the prediction of a number of important phenomena in photonic signal transmission. Examples of special cases of these general equations are then presented. Similar expressions are introduced for harmonic optical up-conversion through a photonic mixer based on a DD-MZM covering any bias point or phase shift between DD-MZM drives.

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