Abstracts

A new, compact model for high-speed electro-optic modulators fully integrated within a microwave CAD environment

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A compact model is presented for high-speed electro-optic modulators fully integrated within the framework of a microwave circuit design suite (MWOFFICE of AWR). Starting from geometrical and layout parameters, the model allows both simple (travelling wave) and complex (phase reversal, periodically loaded) structures to be analyzed and optimized from the standpoint of the electro-optic response both in small-signal (analog) operation and in large-signal (digital) operation exploiting standard simulator tools, including the Monte Carlo statistical analysis of device yield and sensitivity. Finally, the new model allows the designer to include, at no additional effort, parasitic and passive elements (such as optical or electrical delay paths) in the modulator model to account for the effect of tapered transitions and packaging. Comparisons with literature data and design examples are presented to validate the approach and stress its potential in the design of high-speed structure's on LiNbO/sub 3/ substrates.

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