Abstracts

Picosecond Pulse Propagation on Coplanar Striplines Fabricated on Lossy Semiconductor Substrates: Modeling and Experiments (Reply to Comments)

H.H. Wang, J.F. Whitaker, J.H. Son and G.A. Mourou. "Picosecond Pulse Propagation on Coplanar Striplines Fabricated on Lossy Semiconductor Substrates: Modeling and Experiments (Reply to Comments)." 1994 Transactions on Microwave Theory and Techniques 42.9 (Sep. 1994, Part I [T-MTT]): 1723-1723.

While the computations in [1] which use the data in [2, Figs. l(a) and (b)], to determine the propagation velocities of the pulse peaks are correct, we believe that the speeds tabulated in [1] are greater than that of light in vacuum due to a misunderstanding resulting from an omitted statement in [2] and not to any new physical phenomena. That is, an unfortunate oversight in [2] has led to the illusion that there is pulse propagation at a velocity greater than that of the speed of light. In Fig. 1 [2], it should have been noted in the caption for both parts (a) and (b) that the delays of the waveforms have been artificially decreased so that they would all fit within the same 12- ps time window. Squeezing the delays so that the waveforms were closer than the actual calculations indicated has allowed reasonably subtle pulse-width variations and other features to be more easily discerned. This compression of the delays has thus been carried out for the purpose of enhancing the observation of distortion effects. If the true, larger time window had been used, the input, for instance, would have appeared essentially as a delta function, and the pulses would have appeared quite similar to each other.

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