Abstracts

Generation of Gaussian-Like Electromagnetic Pulses

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Electromagnetic pulses generated via the use of photodiodes are inevitably a composite of exponential decay transients due to the finite lifetime of the charge carriers and RC relaxation times of the triggering circuit. We have developed a microwave technique in which the limiting factor of the pulse line-shape is governed by the coupling between a slot and microstrip transmission line instead of exponential transients. The coupling involves the overlap of these two lines in which one line launches the pulse and the other receives it. We have measured mostly electromagnetic pulses with Gaussian lineshape in agreement with our calculations. The formulation of the calculation involves a Lagrangian description of the coupling between these two lines.

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