Abstracts

Pulse-time modulation of mutually coupled arrays of oscillators

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This paper specifies the coupling parameters for multioscillator arrays (2" in number) such that nondegenerate symmetric and antisymmetric states may be sequentially accessed by electronic control of the coupling parameters. A requirement of this coupling configuration is that, when mutually locked, the oscillator amplitudes are identical to one another. Thus, when the oscillator signals are combined with a series of magic-T's, the output power is the sum of the oscillator powers in the array minus some small loss in the coupling circuit for the symmetric state and zero for the antisymmetric state. Switching from one state to the other is accomplished by control of the feedback phase delay between oscillators. Ideal oscillator cases are analyzed for two, four, and higher numbers of oscillators by induction. By this electronic-mode control of mutually locked oscillators, we have been able to generate pulse-time modulation (PTM) signals which are useful for communication systems. We describe some results of an X-band PTM signal generator.

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