Title:	Gap-Coupled Microstrip Resonators to Probe Liquid Crystals
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Abstract:	A transmission line having a single conductor trace on one side of a dielectric substrate and a single ground plane on the other side is known as a microstrip line. Microstrip lines have a significant fabrication advantage over striplines due to their open structure. It also has a simple interconnecting and adjustment system. Microstrip resonators are preferred in a variety of applications due to a number of ad- vantages they have over conventional resonators. Some main advantages of microstrip res- onators are Light weight, low volume, thin profile configuration, low fabrication cost, con- formability to mounting hosts, isotropic radiation characteristics, negligible human body effect, no cavity backing is required, feed lines and matching network can be fabricated easily on the same substrate. The presence of discontinuities, of which Gap is one of the categories, is one of the main reasons coupling occurs in the microstrip. When we make a gap in the Microstrip lines and allow the Microwave frequencies to pass through, the gap creates fringe field capacitance, which stores the energy-signal and returns as a central res- onant line of that board frequency when we plot the data. A microstrip line gap can be modelled as a π-network of capacitances. The series gap capacitance is depends upon the gap width of the Microstrip line. When the gap is filled with a liquid crystal substance, it couples to the microwave frequencies and produces a number of side bands near the central resonant line when we vary the temperatures.
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