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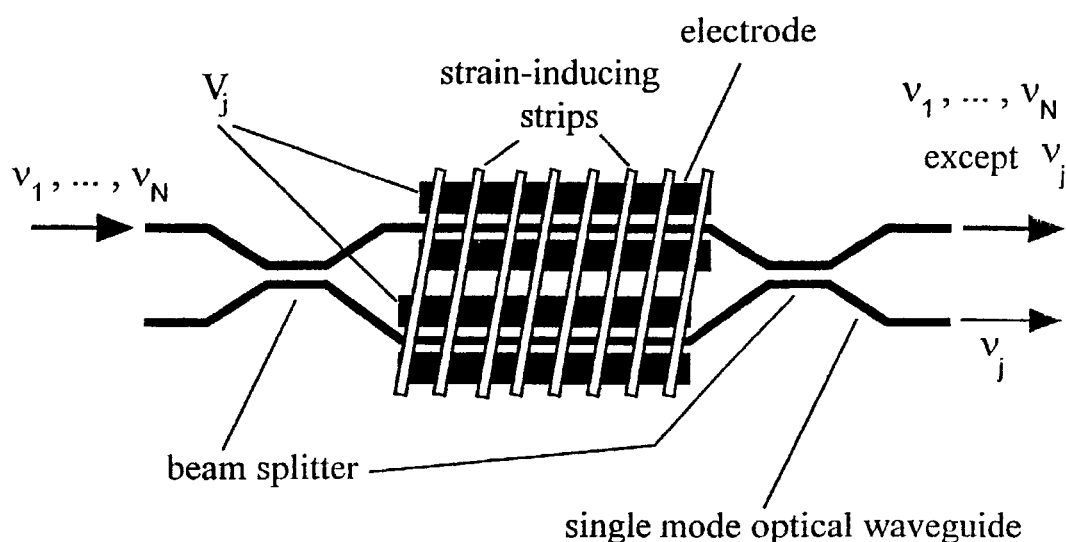
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(54) Title: GUIDED WAVE ELECTROOPTIC/ACOUSTOOPTIC TUNABLE FILTER



(57) Abstract: A two-port guided wave tunable filter in a birefringent electrooptic and/or acoustooptic substrate material includes two 3-port, symmetric Y-branch beamsplitters connected by two waveguide sections in which phase-matched polarization coupling occurs, with an input port and an output port. The optical path difference between the beamsplitters is half an optical wavelength, and the polarization coupling regions between the beamsplitters are relatively displaced by an odd integral multiple of half the spatial period of the perturbation responsible for the coupling. In an electrooptic tunable filter embodiment, the polarization coupling in the waveguides is caused by a spatially periodic strain-inducing film and tuning results from an applied electric field. In an acoustooptic tunable filter embodiment, polarization coupling results from a surface acoustic wave and tuning is accomplished by changing the acoustic frequency. Alternatively, four port electrooptic and acoustooptic tunable filters are formed by replacing the 3-port beamsplitters with 4-port directional couplers.