Abstracts

Analysis of edge-coupled heterojunction phototransistors

D.W.E. Allsopp, M.S. Stern and E. Strobel. "Analysis of edge-coupled heterojunction phototransistors." 1999 Transactions on Microwave Theory and Techniques 47.7 (Jul. 1999, Part II [T-MTT] (Special Issue on Microwave and Millimeter-Wave Photonics)): 1289-1296.

The optical and electrical performance of edge-coupled InGaAs-InP heterojunction phototransistors (HPT's), suitable for detector/mixer applications in millimeter wave radio-fiber systems, has been analyzed. It is shown that the performance can be strongly dependent on the polarization of the incident light, unless the emitter layer is sufficiently thick. A new analytical model for the optical gain of edge-coupled HPT's is developed for strongly confined waveguide modes supported by the heterostructure. The model is shown to be useful for rapid optimization of the epitaxial structure for high transit frequency and high optical gain.

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