

Abstracts

Traveling-Wave Maser Experiments Using Ruby at X Band

G.I. Haddad and D.H. Paxman. "Traveling-Wave Maser Experiments Using Ruby at X Band." 1964 Transactions on Microwave Theory and Techniques 12.4 (Jul. 1964 [T-MTT]): 406-414.

The characteristics of a traveling-wave maser using ruby and a Karp-type slow-wave structure in the X-band frequency range are presented. Several possible operating points in ruby in this frequency range were examined and the inversion ratio, linewidth, paramagnetic absorption, and electronic gain at these points were measured. The experimental results are compared with the theoretical predictions. The problems involved in the design of the traveling-wave maser are discussed and the performance that may be expected of a maser using good ruby crystals, a well matched structure, and sufficient pump power is evaluated. Experimental results on YIG slabs employed in the maser for isolation are presented and compared with theoretical predictions.

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