Abstracts

Energy Analysis for the Amplification Phenomena of Magnetostatic Surface Waves in a YIG-Semiconductor Coupled System

S. Yamada, N.S. Chang and Y. Matsuo. "Energy Analysis for the Amplification Phenomena of Magnetostatic Surface Waves in a YIG-Semiconductor Coupled System." 1977 Transactions on Microwave Theory and Techniques 25.7 (Jul. 1977 [T-MTT]): 600-605.

Amplification phenomena of magnetostatic surface wages (MSSW's) in a ferrite-semiconductor system are analyzed in detail for the first time from an energy view point. For the interactions between MSSW's containing a backward branch and carrier streams in a semiconductor, the dispersion relations are given and the energy conservation law is applied to the system. The results in terms of energy quantities are found to be consistent with the solutions of the dispersion equation and well explain the amplifying mechanism microscopically. We conclude that this kind of interaction is a negative energy dissipation type of instability.

❑ Return to main document.