

## Multistability at Microwave Frequencies.

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**Summary.** — The behaviour of a Fabry-Perot microwave resonator, filled with a two-level absorber and fed by several e.m. waves of frequencies close to the absorber resonance, is investigated. The transmission as a function of the incident fields exhibits multistability. Tristability has been experimentally observed by using ammonia as the saturable absorber and by feeding the resonator with a modulated wave.

### Introduction.

Bistable operations have been proposed and demonstrated in a lot of physical systems, and a vast literature exists dealing with the so-called optical bistability<sup>(1)</sup>, in which the response function of a nonlinear system, irradiated with a strong light field, can have three distinct states, only two of which being stable and experimentally observable, for a proper choice of the values of a set of parameters defining the macroscopic state of the system.

Recently this phenomenon has been investigated in a microwave high- $Q$  Fabry-Perot cavity filled with a saturable absorber (ammonia gas), and both the bistability originating from the saturation of the absorption of the two-

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(<sup>1</sup>) See, for example, a) S. A. COLLINS and K. C. WASMUNDT: *Opt. Eng.*, **19**, 479 (1980), for a comprehensive bibliography up to 1979; b) *Optical Bistability* (New York, N. Y., 1981).

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