Abstracts

Resonance degeneration and spurious mode suppression in a cryogenic whispering gallery mode sapphire resonator

O. Di Monaco, Y. Kersale' and V. Giordano. "Resonance degeneration and spurious mode suppression in a cryogenic whispering gallery mode sapphire resonator." 2000 Microwave and Guided Wave Letters 10.9 (Sep. 2000 [MGWL]): 368-370.

A method to solve the main resonance degeneration and the spurious mode problem for a cryogenic whispering gallery mode sapphire resonator (WGMSR) is reported. Two thin metal wires are deposited on top of the sapphire disk. With an appropriate choice of the relative radial direction and the orientation of these wires with respect to the coupling probe, a dominant perturbation for one of two excited resonance modes has been realized. Moreover, the spurious modes around the selected resonance mode are being suppressed in a frequency span of the order of 300 MHz, without modification of the main resonance performance. In this work, the efficiency of this method is demonstrated experimentally for a cryogenic WGMSR realized with a very high purity sapphire monocrystal operating near 7 GHz.

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