

Modeling and Simulation of the Group Delay Time in Superconductive Multi-pole Hairpin type Filter

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In this work, we developed a new style hairpin type filter by using an interdigitide inner-pole. For this filter we calculated the delay time by simulations. To achieve this we developed a software to synthesise even and odd order equiripple hairpin type filter. This software arbitrarily locates its transfer zeros making symmetric of asymmetric amplitude response and equalizing group delay. The program optimizes the position of the transfer function zeros in order to fulfill the group delay specification masks. Borland C++ compiler was the main program used in this development. The completed program was designed to run under MS-DOS, Window 98, and Window 2000. We also designed and fabricated a hairpin type HTS 2-pole microstrip bandpass filters to operate at 5.8Ghz. The fabrication method was pulsed laser deposition and the films were deposited on sapphire substrates with a thin buffer layer. Compared to the same size regular hairpin type filters, our filters had a lower center frequency.

Keywords: Microwave, Delay, Hairpin, Filter, Frequency.