

Master 2019

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Reconfigurable Microwave Filters implementing Coupled Resonators.

Rekonfigurierbare Mikrowellenfilter mit gekoppelten Resonatoren.

ABSTRACT - Masterthesis

In the context of this master thesis an automatic calculation of the RF/microwave band-pass filters with the Ceramic-Coaxial-Resonators (CCR) is developed by means of the filter theory. The bandpass filters are automatically calculated using the standardised Butterworth and Chebyshev low-pass filters. The $N + 2$ matrix approach supports the calculation of bandpass filters. The combination of the standardized low-pass filters and the $N + 2$ matrix automates the calculations of the bandpass filters. For the automatic calculation of the bandpass filters with CCR technology a Python model is developed. The CCR's are the pole positions (order of the filter) of the filter and their length calculation is implemented in the automated calculation process of the bandpass filters by means of the line theory. The CCR are investigated with the aid of EM simulations. By means of the CCR's technology bandpass filters with miniaturized dimensions can be realized. This has the advantage that compact circuits can be realized. A practical realization of the hardware of the bandpass filters with CCR's is presented.