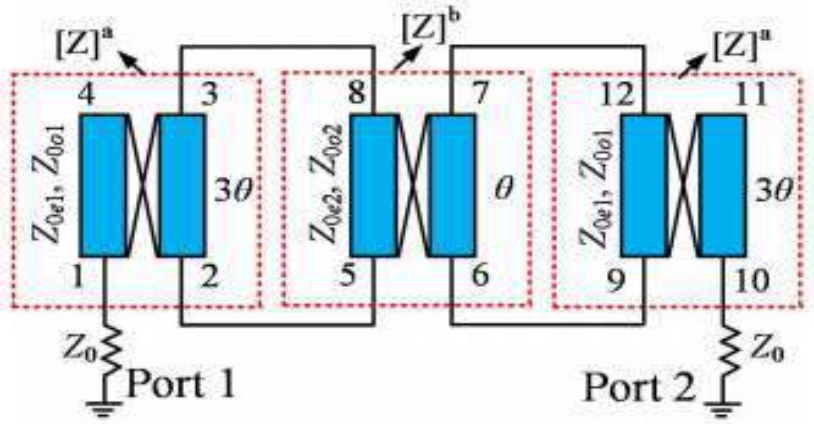
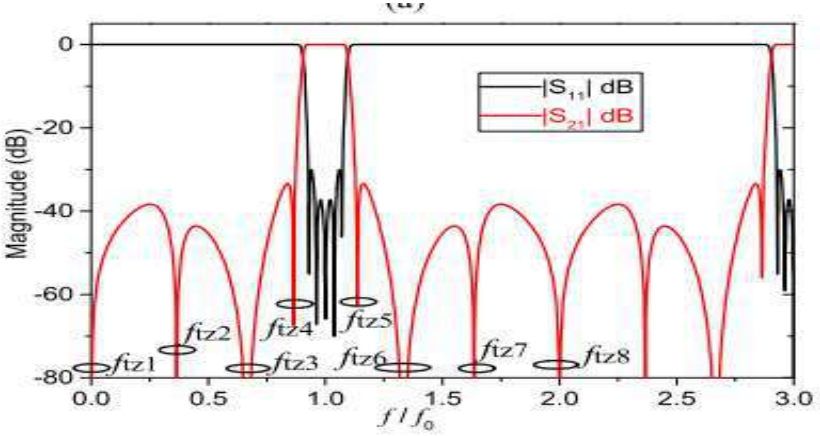
Weekly presentation

2024-10-24

Bandpass Filter Using Three Pairs of Coupled
Lines With Multiple Transmission ZerosKai Da Xu , Member, IEEE, Fengyu Zhang, Yanhui Liu , Member, IEEE, and Qing Huo Liu , Fellow, IEEE .2018

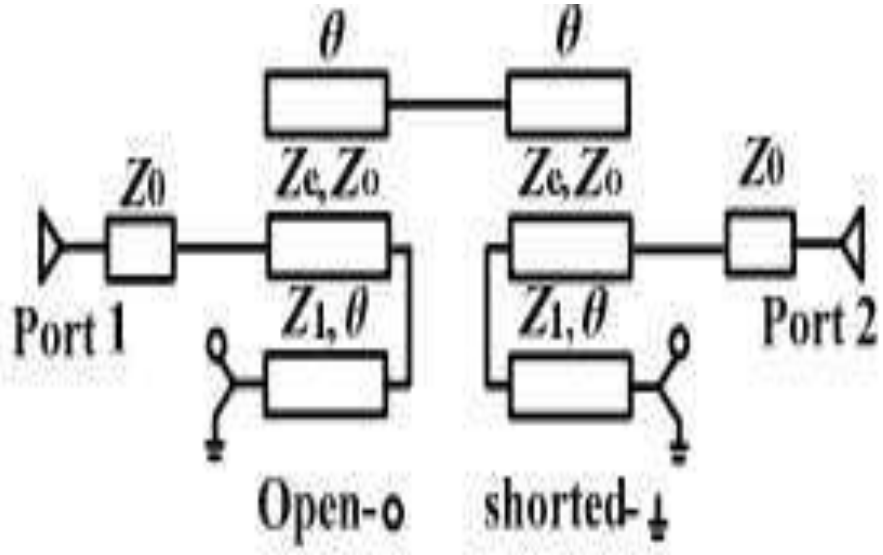
Presents a simple bandpass filter design using three pairs of coupled lines. The structure consists of two ring resonators, each one-wavelength long, coupled with quarter-wavelength lines, and connected to the input and output lines. The filter achieves good out-of-band suppression and sharp cut-off by generating multiple transmission zeros (TZs) and poles. A filter example with a center frequency of 2.1 GHz demonstrates this design, showing eight TZs in the range from 0 to 2 times the center frequency. Simulated and measured results match well, confirming the design's effectiveness.

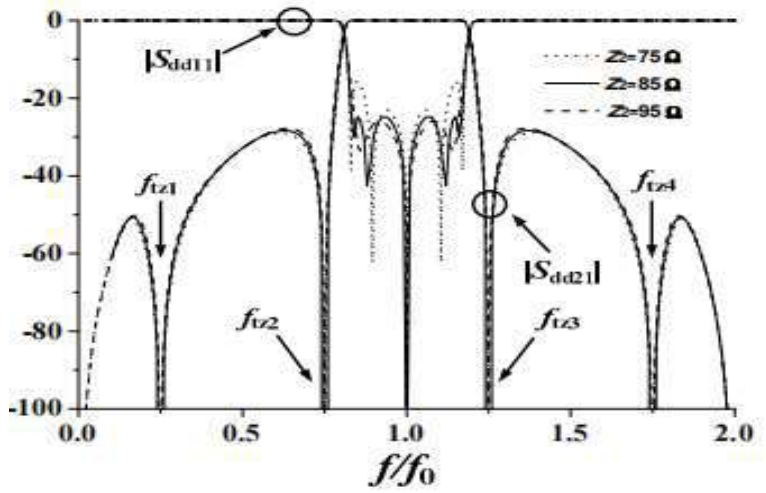




High Selectivity Wideband Balanced Filter Based on Modified Coup.Xin Gao, Wenquan Che*, Wenjie Feng.2017

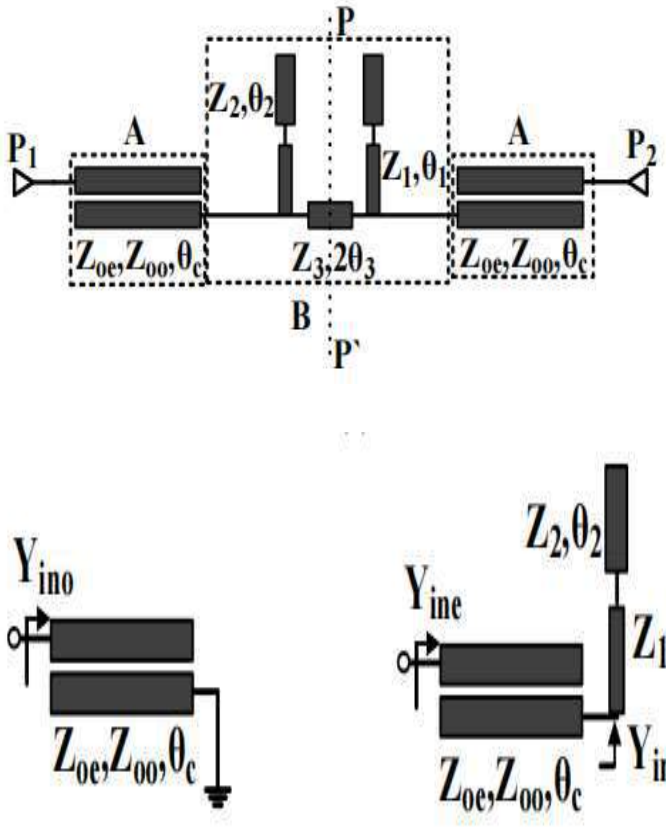
A new wideband balanced filter using modified coupled line structures. The design adds open or shorted stubs to traditional coupled lines to create both bandpass and bandstop functions. To improve selectivity and suppress unwanted signals, four full-wavelength open stubs are used, creating multiple transmission zeros and strong suppression across a wide frequency range. A prototype with a 38% fractional bandwidth for the differential mode is built to demonstrate the design's effectiveness.





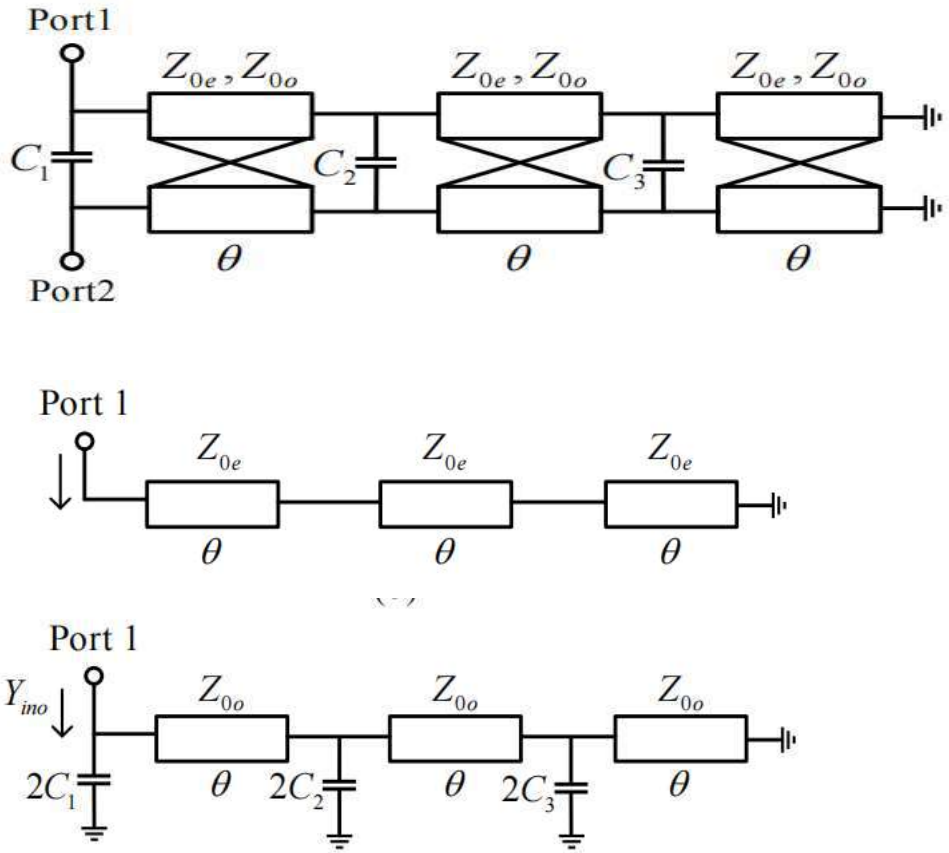
Open-/Short- Circuited Coupled-Line Structures for the Design of High-Selectivity Bandpass FilterPhotos Vryonides1, Salman Arain1, Abdul Quddious2, Symeon Nikolaou1.2021

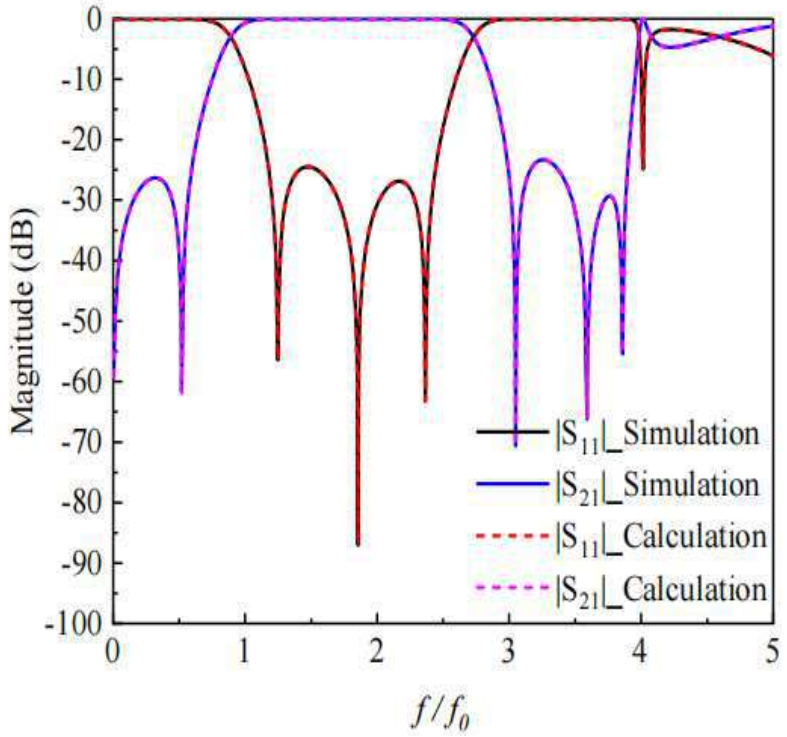
A new compact bandpass filter (BPF) design is introduced using a combination of open and short-circuited lines and symmetrical parallel-coupled lines connected to resonators. This design creates six transmission zeros (TZs) around the passband for better selectivity. To understand the filter's behavior, even-odd mode and ABCD analysis are used. The filter, which covers the S-band (2-4 GHz) with a 60% bandwidth, has a low insertion loss (less than 0.8 dB) and a good return loss (over 16 dB). It's small in size and offers strong suppression of unwanted signals above the passband (over 40 dB).



A Super- compact Wideband Bandpass Filter Using Capacitor Loaded Coupled Lines (Kai-Da Xu1, Jing Tian1, and Hairui Liu2a)

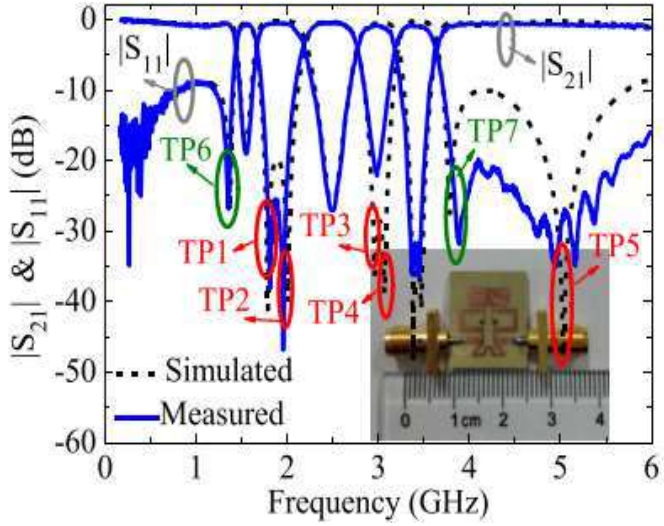
BPF using capacitor-loaded coupled lines

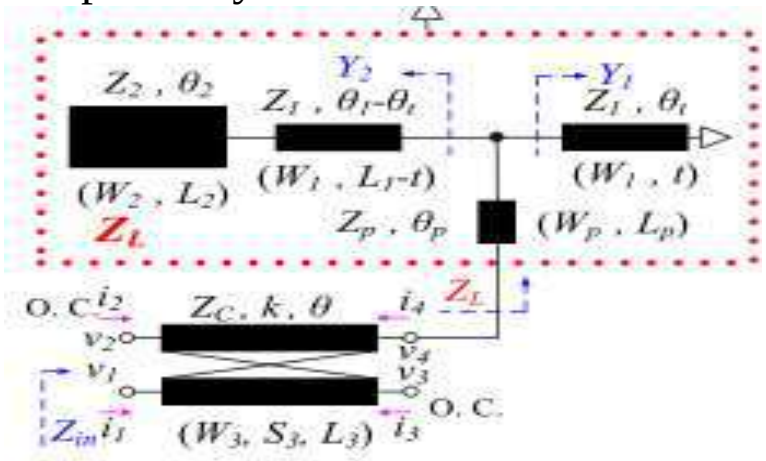




Miniaturized Frequency Controllable Band-Stop Filter Using Coupled-Line Stub-Loaded Shorted SIR for Tri-Band Application Jing Ai, Student Member, IEEE, Yong Hong Zhang, Kai Da Xu, Member, IEEE,Meng Kui Shen, and William T. Joines, Life Fellow, IEEE,2017

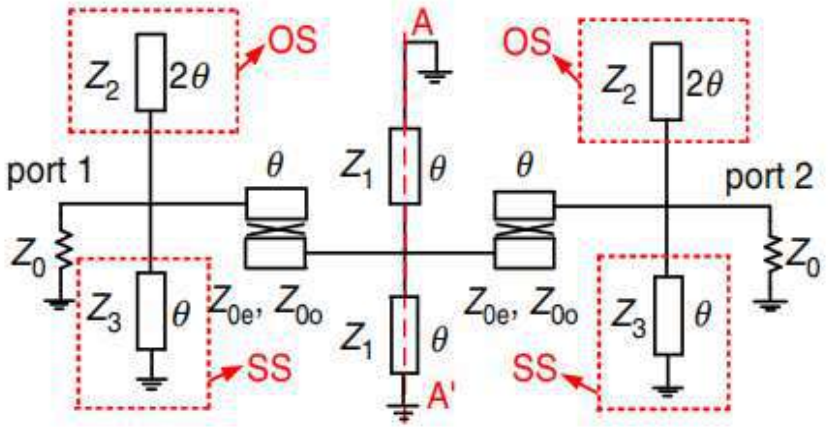
This paper presents a compact microstrip tri-band band-stop filter (TB-BSF) using a coupled-line stub-loaded resonator (CLSLSSIR). The filter can control stop frequencies, attenuation levels, and sharp transitions between pass and stop bands. The CLSLSSIR creates multiple resonances, helping to achieve three stopbands by using a "virtual ground" effect. This design also produces high selectivity through multiple transmission poles. A filter example is built with stopbands at 1.57, 2.4, and 3.5 GHz, showing attenuation levels of 18, 26.5, and 33.2 dB respectively.

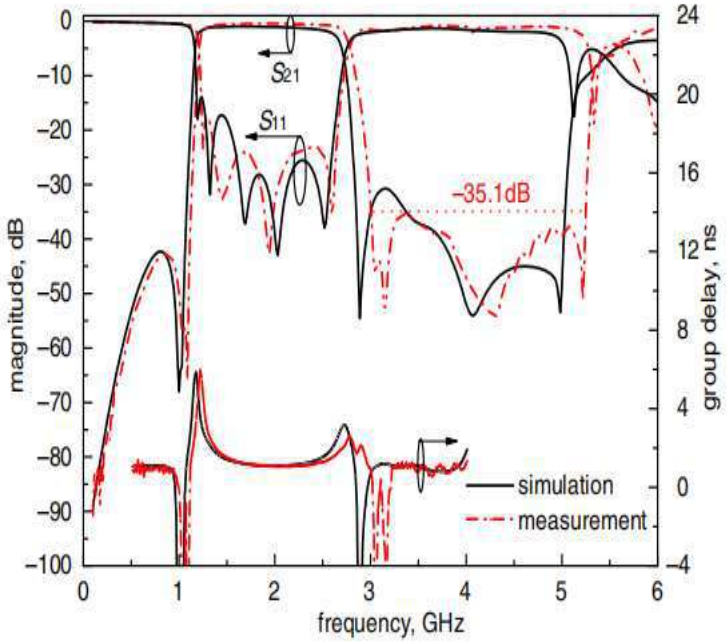




High selectivity seventh-order wideband bandpass filter using coupled lines and open/shorted stubs Kai Da Xu, Fengyu Zhang, Yanhui Liu and Wei Nie.2018

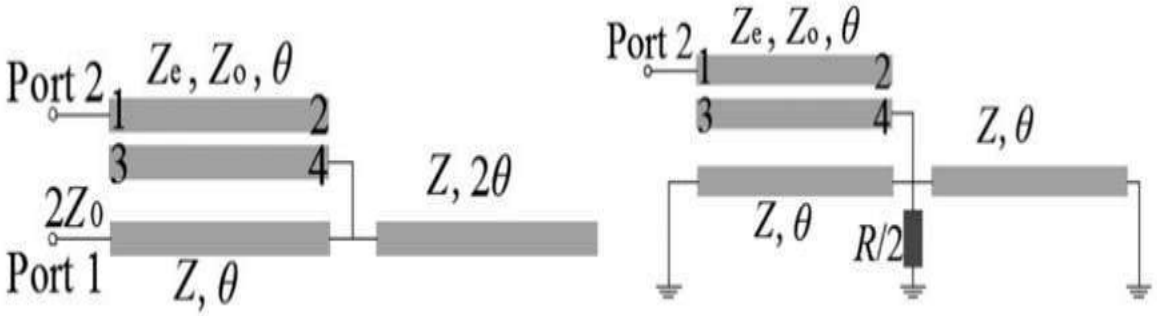
This paper presents a compact seventh-order wideband bandpass filter using coupled lines with open and shorted stubs. It achieves seven transmission poles in the passband and four deep transmission zeros, resulting in sharp filtering. A prototype with a 78% bandwidth (1.22–2.77 GHz) shows strong agreement between simulations and measurements.

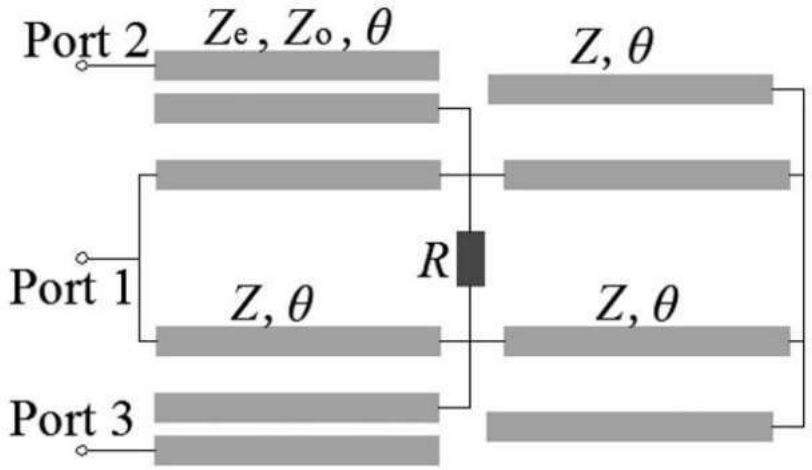


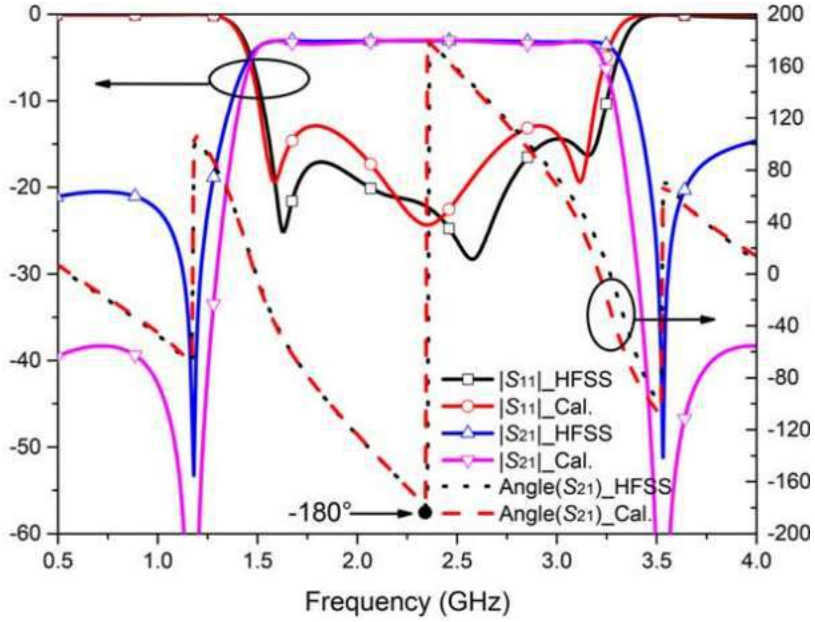


Design of filtering power divider with high frequency selectivityKai-Da Xu1,2 | Yecheng Bai1 |Chunhui Zhu1 | Yanhui Liu1.2018

This article presents a novel wideband filtering power divider with sharp roll-off and good isolation. By using coupled lines and quarter-wavelength microstrip lines, the design achieves a wide passband with good selectivity. A prototype centered at 2.3 GHz with 75% bandwidth shows minimal insertion loss (0.3 dB) and strong isolation (better than 20 dB), with good match between simulation and measurement results.

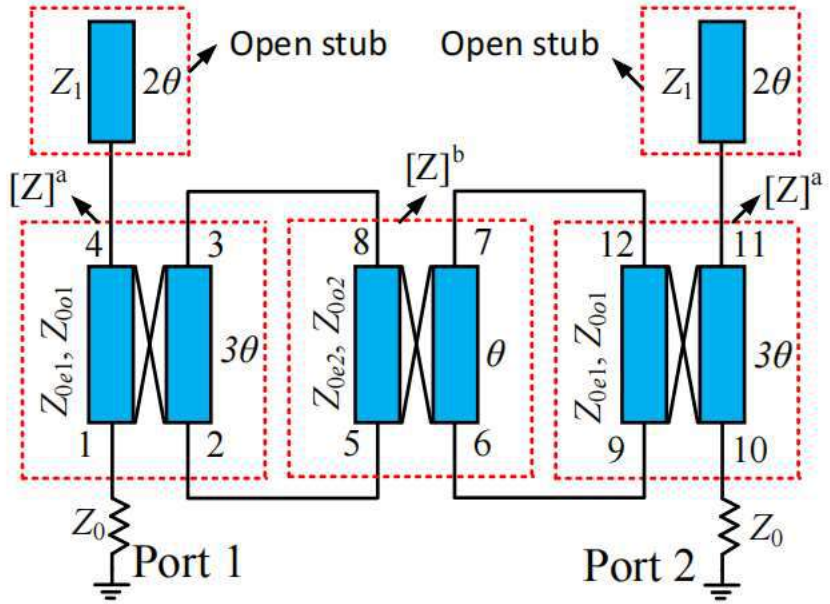


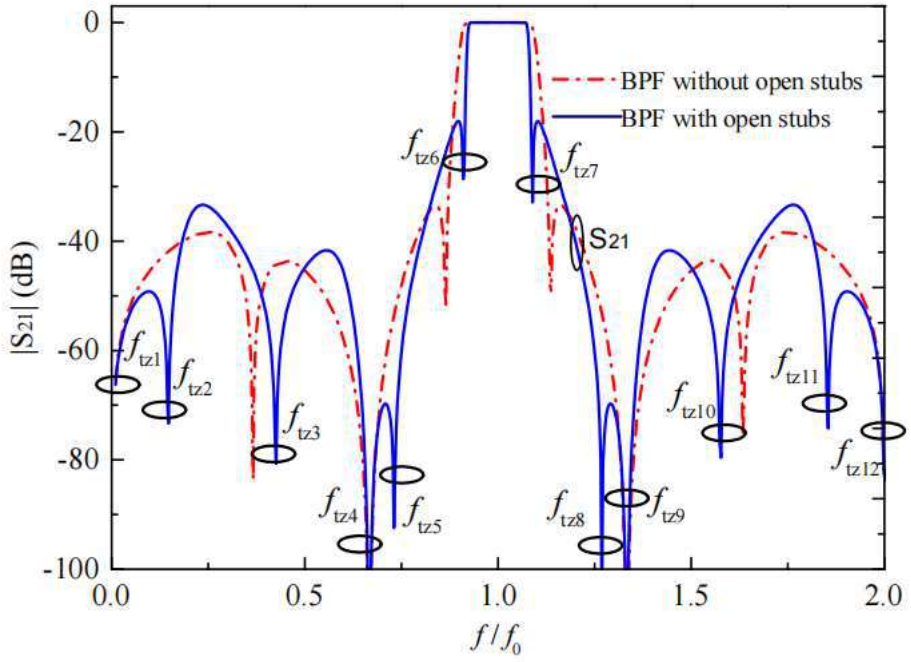




Super High-Selectivity Fifth-Order Bandpass Filter with Twelve Transmission Zeros Yi-jun CAI1, Feng-yu ZHANG2, Kai-da XU2, 3, 4, Dong-hao LI2,2018

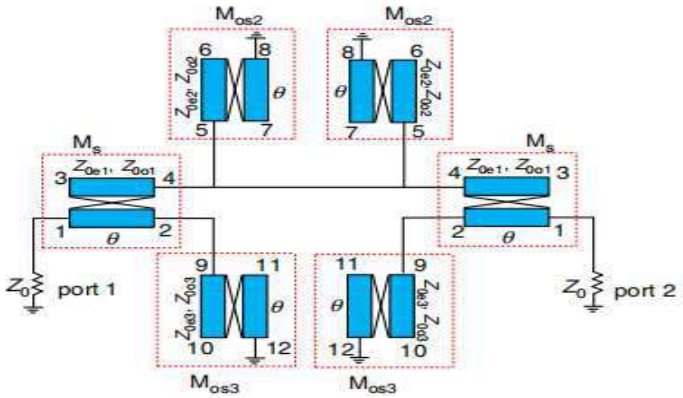
A fifth-order bandpass filter with very high selectivity, using three pairs of coupled lines and two open stubs. It achieves 12 transmission zeros and 5 transmission poles, resulting in excellent out-of-band suppression and sharp roll-off. A prototype centered at 2.04 GHz shows 18% bandwidth and sharp roll-off rates of over 567 dB/GHz, with good agreement between simulations and measurements.

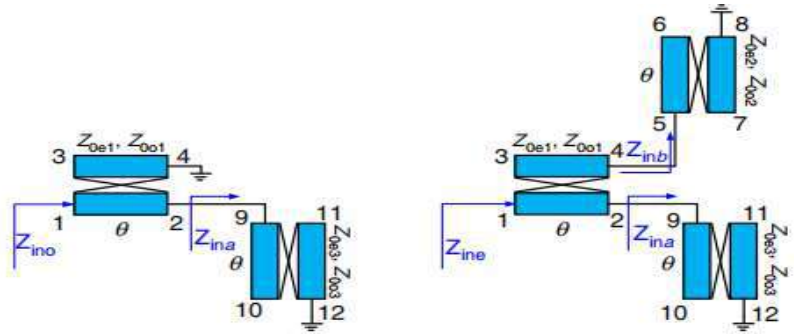


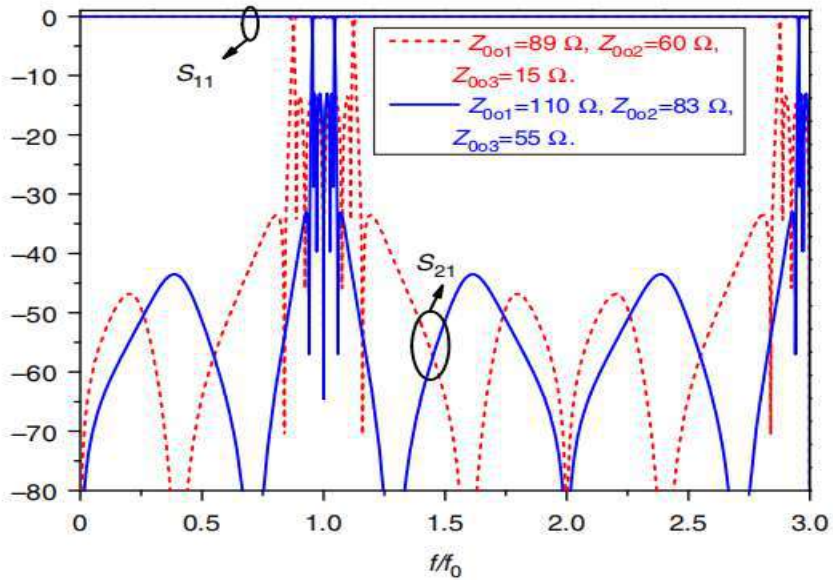


High-selectivity bandpass filter using six pairs of quarter-wavelength coupled lines Fengyu Zhang and Kai-Da Xu. 2019

a high-selectivity bandpass filter using six pairs of quarter-wavelength coupled lines, achieving five transmission poles and six transmission zeros. The design offers sharp roll-off and strong stopband rejection. A prototype centered at 1.9 GHz with a 9% bandwidth shows good agreement between simulations and measurements, with stopband rejections better than 38 dB and 16 dB.







Compact bandstop filters using coupled lines and open/short stubs with multiple transmission poles .Yijun Cai1, Kai Da Xu2, Zhewang Ma3, Yanhui Liu4.2019

A compact bandstop filter using parallel-coupled lines and open stubs, achieving four transmission poles for sharp roll-off and good stopband suppression. To enhance the roll-off rate, a second filter with five poles is designed by adding a short-circuited T-stub. Two filter examples at 2 GHz and 1.8 GHz show good agreement between simulation and measurement results.