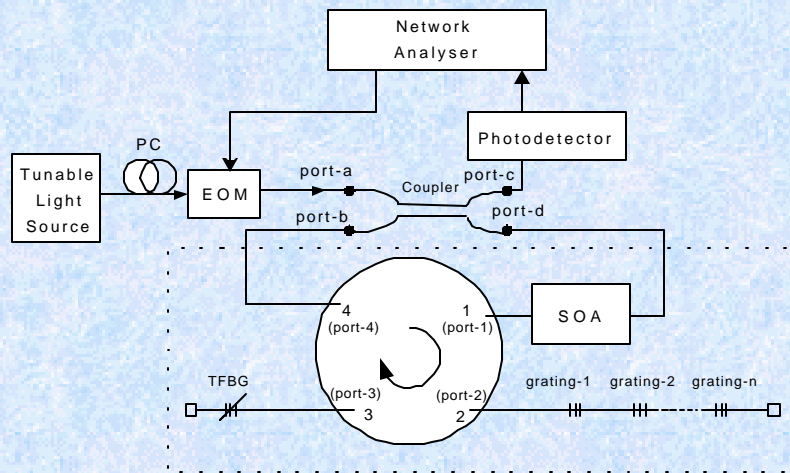


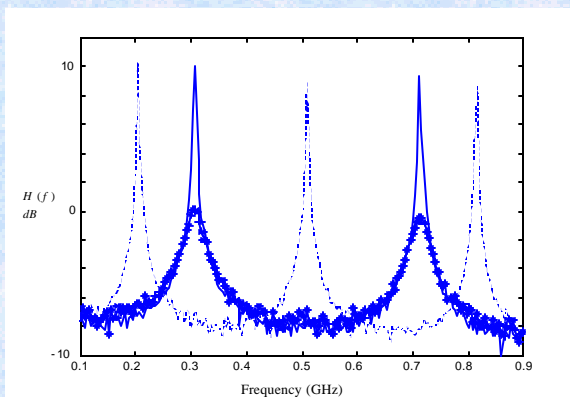


Microwave Optical Filter Design Employing Fiber Bragg Grating Technique

Recently optical processors based on circulating or recirculating filter structures have been proposed for performing functions such as microwave frequency filtering, correlation, matched filtering. These configurations offer the ability to process high speed signals directly in the optical domain, thus removing the limitations of O/E and E/O conversion. Because their nature of wide bandwidth, insensitivity to electromagnetic interference and low loss, fiber optic filters are particularly attractive in microwave applications.



Schematic of the experimental setup



Experimental results for the AFORDL microwave filter
Solid line for input wavelength is 1552.5nm
Star Line for input wavelength is 1555.75nm
Dashed line for input wavelength is 1558.98nm.

In this project, we mainly explore microwave filter design based on fiber Bragg grating techniques. Because it has several attractive advantages: the tap weights can be controlled via grating reflectivity; the sampling time can be controlled via grating spacing; the interaction wavelength can be controlled via grating pitch. Grating based microwave filters offer wideband and programmable processing functions and has wide applications in radio-over-fiber system and phased array antennas.

Investigators :

Assoc. Prof. Lu Chao (eclu@ntu.edu.sg)

Ms Xiaoke Yi & Mr Fang Wei
(p148990070@ntu.edu.sg)