

## ABSTRAC

The need for higher data transfer requires the development of telecommunication system with network that has a high speed of data transfer and accommodate a lot of traffic. Optical fiber communication system having two such capabilities can solve that's problem . To support the growing amount of traffic in optical fiber communication systems, created a system that can combine multiple information signal that is wavelength division multiplexing (WDM). One componentsupporting the WDM is optical interleaver, which has a function as a multiplexer demultiplexer.

This final project discusses about the simulation and analysis of microring resonator used for the application of optical interleaver at the coarse wavelength división multiplexing working frequency that's 193,289 THz. The method used is the method of experimental studies by varying parameters of the simulation to generate the characteristic standard. The simulation was performed by using software CST Microwave Studio 2014 and parameters are varied in this simulation is the radius and gap. Furthermore, the analysis of the optimization results was performed, the analysis included the performance parameters consisting of free spectral range (FSR), bandwidth (FWHM), finesse and Q factor.

Based on these experiments obtained parallel cascaded microring resonator that has accordance. The result of the simulation is capable of generating the appropriate FSR value that's 2THz, narrow bandwidth, the value of finesse and a high Q factor and also works in the area of working frequency that's 193,3 THz.

**Keywords:** Optical interleaver, *Wavelength División Multiplexing*, Microring Resonator