

# **Abstract**

**Moustafa Hussein Aly**

## **Four-Wave Mixing Crosstalk in DWDM Optical Fiber Systems**

In this study, we introduce the third nonlinear optical effect known as four-wave mixing (FWM), its implications in optical fiber systems and finally a proposed technique for channel allocation to reduce its effect. Then, we investigate the channel crosstalk due to the FWM for various values of fiber length, core effective area, dispersion, channel spacing and channel power as a function of the number of multiplexed channels in a multi-channel system. Results show that, the ultimate factor, which degrades the system performance, is the FWM power.