SCHOOL OF ENGINEERING

SIMULATION OF POLARIZATION MODE DISPERSION IN FIBRE OPTIC COMMUNICATION LINK USING MATLAB

FINAL REPORT

STUDENT'S NAME : EDWIN JACOB
STUDENT'S ID : 99308968
MAJOR : B. ENG. (HONS) COMMUNICATION
AND ELECTRONIC ENGINEERING
FIRST SUPERVISOR'S NAME : MR. FAWWAZ
SECOND SUPERVISOR'S NAME: MR. LACHMAN
PROJECT'S COORDINATOR :DR. KHEDR M. M. ABOHASSAN

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Abstract

Polarization Mode dispersion refers to the phenomenon present in all real fibres that result in the different polarization components of a signal launched into the fibre to travel at different speeds, producing a different propagation delay for each component. The thesis touches on the fundamental aspects of optical fibres covering the defects present within a fibre which causes the degradation of the optical signal. Mathematical methods representing Polarization Mode Dispersion are presented and analyzed which are then written into programming languages to simulate the effects of PMD. The simulated results are then statistically viewed and analyzed to verify that PMD is a statistical component and thus a comparison between the statistical results and results obtained through the simulation were made which leads to a conclusion on the possibility of predicting the randomly varying characteristics of PMD present within an optical communication link