

Webinar on “Introduction to Multi-Terabit Transmission System”

- IEEE Photonics Society Student chapter, MNIT Jaipur organized a webinar on “**Introduction to Multi-Terabit Transmission System**” by Mr. Shekhar Kumar, Associate Manager, Sterlite Technologies Ltd., Maharashtra, India on 23rd October, 2020.
- Mr. Shekhar Kumar is working with Sterlite Technologies Limited as Associate Manager of research & development centre of excellence-optical physics & system engineering. After completing MTech in ECE from MNIT, JAIPUR Mr. Shekhar joined Reliance Jio, Rajasthan in 2015 where he looked after network operation of Rajasthan circle and then in 2016, he moved to JIO headquarters where he took care of DWDM transport operation at National level. In 2018 he joined R&D Center of Excellence at Sterlite Technologies as an Associate Manager where he takes care of Multi-Terabit Communication LAB. Recently, he has built 200/400G Test Bed which is a state of art in itself.
- Ms. Poonam addressed all the participants about this event and introduced to Mr. Shekhar Kumar. It was then followed by the lecture of Mr. Shekhar Kumar. During the lecture, Dr. Arvind explained about the WDM system, 100G/200G DWDM transmission system for metro and long network systems. He also showed the received and transmitted spectrum at mulit terabit transmission system. He explained about different evolution to increase the optical fiber capacity. After completion of the webinar participants interacted with the dignitary. Through the interaction, several other information about modulation system at the transmitter of mulit terabit transmission system is discussed.
- The event was ended with a thanks note given by Ms. Poonam and IEEE Photonics Society Student chapter faculty advisor Prof. Vijay Janyani. The event was successful with the presence of Ph.D. scholars, M.Tech students and B.Tech students from different colleges of Jaipur.
- Planning and event execution:
 - For the announcement of the event, a poster was created with the details of the registration link.
 - The students registered through a google form in which along with their personal details they had to submit their email ID.
 - The webinar was organized on MICROSOFT TEAMS.
 - After the lecture, a feedback survey link was provided to all the participants.
 - The e-certificates were issued to all the participants of the webinar.

Event Photographs



Malaviya National Institute of Technology, Jaipur India

Oct.23,
2020

Department of Electronics & Communication Engineering
Malaviya National Institute of Technology, Jaipur
In association with
SPIE Student Chapter, MNIT Jaipur

&
IEEE Photonics Society Student Chapter, MNIT Jaipur

Presents
One Day Webinar on

“Introduction to multi-terabit transmission system”



Resource Person
Mr. Shekhar
Associate Manager,
*Research & Development Center of
Excellence - Optical Physics & System
Engineering, Sterlite Technologies Ltd*

5-6 PM
23/10/2020

E-certificate will be awarded to the participants who attend the webinar.

5-6 PM, Friday, 23 Oct., 2020

Platform: Microsoft Teams

No Registration fee required.

Registration Link:
<https://forms.gle/V6s55XpXb8QMxvrS6>

Scan to Register





Ms. Poonam Devi
Moderator
IEEE Photonic Society
MNIT Jaipur



Mr. Amit Kumar Sharma
Chair
IEEE Photonic Society
MNIT Jaipur



Mr. Bipin Kumar Saw
President
SPIE Student Chapter
MNIT Jaipur



Prof. Vijay Janyani
HOD, ECE
Faculty Advisor, SPIE Student
Chapter, MNIT Jaipur

Poster designed for the event

Recording has started. This meeting is being recorded. By joining, you are giving consent for this meeting to be recorded. [Privacy policy](#) Dismiss

WDM system

The diagram illustrates a Wavelength Division Multiplexing (WDM) system. On the left, three input devices (SDH STM1/4/16/64, ROUTER IP, and ATM (OUT/20G)) feed into a 'Converter "OTU"'. The outputs of these converters are combined in a multiplexing unit. The resulting signal passes through an 'Optical Amplifier (OA)' which is powered by an 'OSC' (Optical Supervisory Channel). The amplified signal then goes through a demultiplexing unit, which is also powered by an 'OSC'. Finally, the signal is split into three output devices (SDH STM1/4/16/64, ROUTER IP, and ATM (OUT/20G)) via another 'Converter "OTU"'. A legend below the diagram defines the components: OTU → Optical Transport Unit, OA → Optical Amplifier, MUX → Multiplexing/Demultiplexing Unit, and OSC → Optical Supervisory Channel (1510nm).

OTU → Optical Transport Unit
 OA → Optical Amplifier
 MUX → Multiplexing/Demultiplexing Unit
 OSC → Optical Supervisory Channel (1510nm)

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Snapshot during lecture

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Connector handling solution

The diagram shows a 'Connector handling solution' tree. It branches into five categories: 'Connector dust or metal particle detector (Microscope 1)', 'Connector dust or metal particle detector (Microscope 2)', 'Connector Cleaner Type 1', 'Connector Cleaner Type 2', and 'Connector Cleaner type 3'. Each category is accompanied by an image of the respective product. A 'Your microphone is muted.' notification is visible at the bottom of the slide.

Connector dust or metal particle detector (Microscope 1)
 Connector dust or metal particle detector (Microscope 2)
 Connector Cleaner Type 1
 Connector Cleaner Type 2
 Connector Cleaner type 3

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Snapshot during lecture

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High Data Transmission Capability of Terabit Lab at COE

The slide displays three diagrams illustrating high data transmission capabilities:

- Fig. 10G Single Channel Direct Detection:** A linear system starting with a Laser, followed by a Modulator, a Data-generator, and a PPG, Error-Detector & Oscilloscope.
- Fig. 100G/200G Single Channel Transmission System:** A system with Tx PDR, VOA, Fiber Span, EDFA, and OMA components.
- Fig. 100G/200G DWDM Transmission System for access/metro/long networks emulation:** A system with Coherent Modulator, De-correlator & BS, Fiber Spans, EDFA Rack 1, EDFA rack 2, and OMA & Receiver Acquisition.

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Snapshot during lecture

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Multi-Terabit Transmission System @ Sterlite Technology COE Lab

The diagram illustrates a multi-terabit transmission system with the following components and connections:

- Transmitters:** Laser Bank 1 and Laser Bank 2 feed into PM MUX 1 and PM MUX 2, which combine into an OMFT.
- Optical Path:** The OMFT signal passes through an AWG and a Transponder. It then splits into three paths: 5% of Port 30, 1% of Port 32, and 1% of Port 28.
- Receiver and Amplification:** The 1% of Port 32 path goes through a De-correlator and BS2. The 1% of Port 28 path goes through a De-correlator and BS2. The 5% of Port 30 path goes through a Fiber Span, EDFA, and Pre-amp.
- Power Distribution:** The Pre-amp output is split into 50% for OMA and 50% for Rx. The De-correlator outputs are split into 90% and 10% for launch power variation.

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Snapshot during lecture

Meeting | Microsoft Teams

teams.microsoft.com/_/#/pre-join-calling/19:5aca0ba387be4a07924e3b7483368689@thread.tacv2

Limitation and Innovation

Capacity (bit s⁻¹)

Year

Capacity limit for current technology

WDM

EDFA

Improved transmission fibers

High spectral efficiency coding

Space division multiplexing

trend: x10 every 4 years

Space for Innovation

Multiplexing: Space Division Multiplexing

Technology:

1. Fiber bundles
2. Multicore Fibers
3. Few Mode Fibers
4. Coupled-Core Fibers
5. Photonics Crystal Fibers

****Increasing the modulation order (QPSK → 16QAM → 64QAM), there is another method to increase the overall optical fiber capacity, i.e., to expand the usable optical spectrum**

+37

Start

5:57 PM 10/23/2020

Snapshot during lecture