



K.S.R.M. COLLEGE OF ENGINEERING

(AUTONOMOUS)

Kadapa, Andhra Pradesh, India– 516 003

DEPARTMENT OF ECE

Report on
A Two-Day Workshop on “Photonics” (Virtual Mode)
(In association with IEEE Photonics Society, Bangalore Chapter)
28-29 June, 2021

Electronic and communications engineering is the utilization of science and math applied to practical problems in the field of communications. Can we imagine our daily life without mobile phone, laptop (computer), television, tablets, digital watch, internet banking, ATM cards, Wi-Fi, internet connection, microwave Oven and many more gadgets and communication systems. No, we cannot. All these are possible due to Electronics & Communication Engineering (ECE). As we look into future, robots will also be part of our lives very soon and embedded electronics which is a sub branch of electronics play an important role in this. All of this makes ECE an interesting field to study and work.

Electronics & Communication Engineering deals with the electronic devices, circuits, communication equipment's like transmitter, receiver, integrated circuits (IC). It also deals with basic electronics, analog and digital transmission & reception of data, voice and video (Example AM, FM, DTH), microprocessors, satellite communication, microwave engineering, antennae and wave progression.

About Workshop:

Photonics is the science and technology of using light, with applications ranging from optical communications, sensors, biomedical and quantum computing. In this workshop introductory lectures will be given in some emerging topics in photonics. It will be useful to students and faculty members who want to know the basics and recent developments in Photonics. In particular you

will find ideas to take up projects or research work. The workshop is technically supported by IEEE Photonics Society Bangalore Chapter.

Description about the event:

The event started with the formal Inaugural function at 9.30 AM in Virtual mode (Google Meet). Dr. V. S. S. Murthy (Principal), Prof. A. Mohan (Director), Dr. T. Srinivas (Associate Professor, ECE, IISc, Bangalore), Dr. G. Hemalatha (HOD, ECE) presided over the inaugural function. The event started with Welcome speech and a brief report on workshop was given by Dr. G. Hemalatha, HOD of ECE, followed by presidential address given by Principal, director and esteemed chief guest. The chief guest addresses the importance of Photonics and given suggestions and ideas for doing projects on photonics. The inaugural function ended with a Vote of thanks.

Valedictory function started at 3.20pm. Students had given their feedback on the workshop. The function was finally ended by expressing sincere thanks to Resource persons, management, director, Principal, HOD, Faculty, faculty coordinators and student coordinators for their co-operation and active participation.

Students from B. Tech 3rd & 4th year ECE were participated in this workshop. Six Speakers from reputed Engineering colleges has delivered their talks on Photonics.

28-6-2021 Monday- Day1 (9.30 AM-4.30 PM)

Session 1(10.00 am-11.15am)

Dr. T. Srinivas, Associate Professor, ECE, Indian Institute of Science, Bangalore.

tsrinu@ece.iisc.ernet.in

Talk: Photonic Integrated Circuits

Session 2 (11.30am-12.45pm)

Dr. G. Thavasi Raja, Assistant Professor, National Institute of Technology, Trichy, Tamil Nadu.

thavasi@nitt.edu

Talk: Fiber optics and applications

Session 3 (1.45pm-3.00pm)

Dr. Mandeep Singh, Assistant Professor, NITK, Surathkal, Mangalore, Karnataka, India.

mandeep.singh@nitk.edu.in

Talk: Recent trends in “Microwave Photonics”

Session 4 (3.15pm-4.30pm)

Dr. Venkatesha M, Associate Professor, Senior Member IEEE, Department of ECE
Sai Vidya Institute of Technology, Bangalore.

venky.svit@gmail.com

Talk: Advancements of Photonic Crystal Fibers for Sensing Applications

29-6-2021 Tuesday-Day2 (9.30 AM-4.00PM)**Session 5** (9.30am-10.45am)

Dr. D. Sriram Kumar, Professor, National Institute of Technology, Tiruchirappalli, Tamil Nadu.

srk@nitt.edu

Talk: Optical Wireless Communications

Session 6 (11.00 am-12.15 pm)

Dr. T. Srinivas, Associate Professor, ECE, Indian Institute of Science, Bangalore.

tsrinu@ece.iisc.ernet.in

Talk: Quantum Communications and Computing

Extra Talk: Awareness on IEEE

Session 7 (1.45pm-3.00pm)

Dr K V S S S Sai Ram, Professor, NMAM Institute of Technology (Autonomous), Udupi,
Karnataka.

drsairam@nitte.edu.in

Talk: Optical Networks

List of Participants:

S. No.	Name	Roll No.	College Name
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25	Kanaparthi Divya	189Y1A0458	K. S. R. M COLLEGE OF ENGINEERING
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33	P. Hima Bindhu	189y1a04a5	K. S. R. M COLLEGE OF ENGINEERING
34	Dara Sekhar	179y1a0435	K. S. R. M COLLEGE OF ENGINEERING

35	Anuguru Vineela	179y1a0408	K. S. R. M COLLEGE OF ENGINEERING
36	M. Reddy Amrutha Bhavani	189y1a0484	K. S. R. M COLLEGE OF ENGINEERING
37	Mukkamala. Yukthamuki	189y1a0489	K. S. R. M COLLEGE OF ENGINEERING
38	Bandi Nikhil Kumar	179y1a0417	K. S. R. M COLLEGE OF ENGINEERING
39	Chavva Jaswitha	179y1a0429	K. S. R. M COLLEGE OF ENGINEERING
40	A. Prathyusha	179y1a0409	K. S. R. M COLLEGE OF ENGINEERING
41	Sainath Balam	179y1a0413	K. S. R. M COLLEGE OF ENGINEERING
42	Manjula Pavani	189y1a0482	K. S. R. M COLLEGE OF ENGINEERING
43	Palem Gayathri Devi	189Y1A04A4	K. S. R. M COLLEGE OF ENGINEERING
44	Bhumireddy Kuntolla Suresh	179y1a0424	K. S. R. M COLLEGE OF ENGINEERING
45	B. Babu prasad	179y1a0412	K. S. R. M COLLEGE OF ENGINEERING
46	Ambati Gurusiva	179y1a0403	K. S. R. M COLLEGE OF ENGINEERING
47	AM. Vinay Kumar	179Y1A0405	K. S. R. M COLLEGE OF ENGINEERING
48	Bandi. Naveen Kumar	179y1a0416	K. S. R. M COLLEGE OF ENGINEERING
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DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

A TWO-DAY WORKSHOP ON "PHOTONICS" (Virtual Mode)

GUEST SPEAKERS



Dr. D. Sriram Kumar,
Professor, ECE
National Institute of Technology
Tiruchirappalli
Tamil Nadu, INDIA



Dr. T. Srinivas
Associate Professor
ECE, Indian Institute of Science
Bangalore.



Dr Venkatesha M
Associate Professor, ECE
Senior IEEE Member
Sai Vidya Institute Of Technology
Bangalore



Dr. Mandeep Singh,
Assistant Professor, ECE
NITK, Surathkal
Mangalore, Karnataka, India.



Dr. G. Thavasi Raja,
Assistant Professor, ECE
National Institute of Technology
Tiruchirappalli
Tamil Nadu, INDIA



Dr K V S S S S Sai Ram,
Professor, E & C
NMAM Institute of Technology
(Autonomous Affiliated to VTU)
Karkala Taluk, Udipi
Karnataka.

DATE :
28-6-2021 & 29-06-2021

Co-Ordinator: *Miss Shaik Jabeen*
Assistant Professor

Co-coordinators: *Dr. S. Zahiruddin*
Assistant Professor

Smt. S. Sharmila Banu
Assistant Professor

Dr. G. Hemalatha
HoD
Convener

Dr. V.S.S. Murthy
Principal

Prof. A. Mohan
Director

Sri. K. Chandra Obul Reddy
Management Member

Smt K. Rajeswari
Correspondent,
Secretary, Treasurer

Sri K. Madan Mohan Reddy
Vice-Chairman

Sri K. Raja Mohan Reddy
Chairman

ESTD : 1980

In Association With




Poster of workshop- Photonics



Prof. G. Hemalatha, HOD of ECE Dept. addressing the Gathering



Hon' Chief Guest Dr. T. Srinivas, Associate Professor, ECE, IISc, Bangalore addressing in the inaugural event

The screenshot shows a Zoom meeting interface. On the left, a slide is displayed with the following text: **Photonic Integrated Circuits**, T. Srinivas, Associate Professor, ECE Dept, Indian Institute of Science, and the email address tsrinu@ece.iisc.ernet.in. On the right, a video thumbnail shows a man with glasses, identified as T Srinivas.

Dr. T. Srinivas, Associate Professor, ECE, IISc, Bangalore delivering the talk on Photonic Integrated Circuits.

The screenshot shows a Zoom meeting interface. On the left, a slide is displayed with the following text: **Fiber Optics and Applications**, By G. Thavasi Raja, Assistant Professor, Department of ECE, NIT, Tiruchirappalli - 620015, TN. The slide also features a diagram of a fiber optic cable with labels for Cladding, Core, and Buffer Coating, the logo of the National Institute of Technology Tiruchirappalli, and the date 28th June 2021. On the right, a video thumbnail shows a man with glasses, identified as Thavasi Raja G.

Dr. G. Thavasi Raja, Assistant Professor, National Institute of Technology, Tiruchirappalli, Tamil Nadu delivering the talk on Fiber optics and applications.

LAYOUT & OPERATION PRINCIPLE

$$I_D(L, t) = \left[C J_0(m) \cos \left(\frac{1}{2} \beta_2(\omega_c) 16 \omega_{RF}^2 L \right) \right]^2 \beta_1(\omega_c) 8 \omega_{RF} L$$

Mandeep Singh and Sanjeev Kumar Raghuvanshi 2017 J. Opt. 19 115801

Dr. Mandeep Singh, Assistant Professor, NITK, Surathkal, Mangalore, Karnataka, India delivering the talk on Microwave Photonics.

Two of these units were used between building to re-establish a high speed communication link.

- FSO communication between Merrill Lynch Brokerage and Wall Street in New York following the terrorist attack that destroyed normal fiber optic link

Dr. D. Sriram Kumar, Professor, National Institute of Technology, Tiruchirappalli, Tamil Nadu delivering the talk on Optical wireless communication.

IEEE

Qubit – The Quantum Bit

- The quantum "version" of classical bit
 $|0\rangle \rightarrow 0 \quad |1\rangle \rightarrow 1$
- Quantum Superposition
 $|\Psi\rangle = \alpha|0\rangle + \beta|1\rangle$
- Probability of getting 0 is $|\alpha|^2$
- Probability of getting 1 is $|\beta|^2$
 $|\alpha|^2 + |\beta|^2 = 1$
- Mathematically,

$$|\Psi\rangle = e^{i\varphi} \left\{ \cos \frac{\theta}{2} |0\rangle + e^{i\varphi} \sin \frac{\theta}{2} |1\rangle \right\}$$

Bloch Sphere
Image Courtesy: IBM

T Srinivas

Dr. T. Srinivas, Associate Professor, ECE, Indian Institute of Science, Bangalore delivering the talk on Quantum communication and computing.

Market evolution for Fiber Networks

Cumulative Market size

Access wave
Metro wave
Core wave

1990 1995 2000 2005 2010

D
Dr. Sai Ram E&C dept NMAMIT

Dr K V S S S Sai Ram, Professor, NMAM Institute of Technology (Autonomous), Udupi, Karnataka delivering the talk on optical networks.

Feedback: All the participants expressed their gratitude to HOD, ECE for organizing this workshop and giving an exposure on emerging technologies in Photonics from eminent speakers.

Future Perspective:

The department of Electronics & Communication Engineering is looking forward to organize the workshops/seminars/guest lectures on Recent trends and advancements in technology.

Report Submitted by:

Co-Ordinator: Miss S. Jabeen, Assistant Professor/ECE

Co-coordinators: Dr. S. Zahiruddin, Assistant Professor/ECE

Smt. S. Sharmila Banu, Assistant Professor/ECE