



# MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE (UGC-AUTONOMOUS)



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Recognised Research Center, Accredited by NBA, NAAC for CSE, ECE, EEE, ME & MBA  
World Bank Funded Institute, Recognised by UGC under the sections 2(f) and 12(B) of the UGC act 1956  
Recognised as Scientific & Industrial Research Organization by DSIR of DST  
**Department of Electronics & Communication Engineering**

## Report on For One-week Short Term Course on Future Opportunities and Challenges in 5G Technology (FOC-5G) From 13th Oct to 17th Oct 2021

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In this meeting (13)

- Tasher Ali Sheikh
- 18204017PUGAZHENDHLV External
- Amar Kumar Barik (Guest) Guest
- ARUNRAJ (Guest) Guest
- D ARUN External
- D. Wasim Arif (Guest) Guest
- Divya Mokara (Guest) Guest
- Dr S Sampath Kumar
- Gowthami (Guest) Guest
- jencyrubia External
- R Bharathi (Guest)

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35°C Haze 13:59 14-10-2021

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Participants

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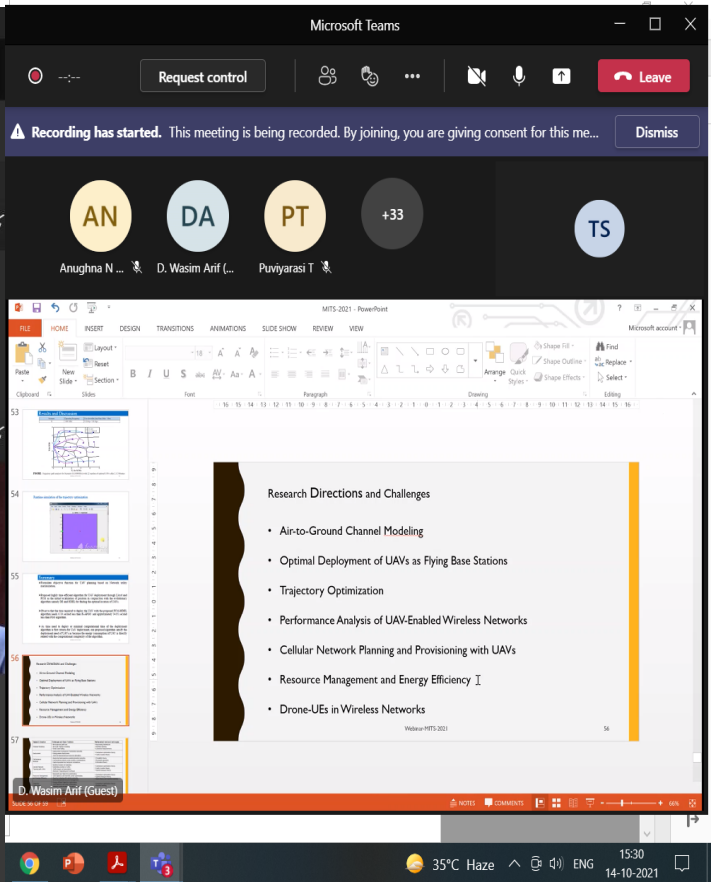
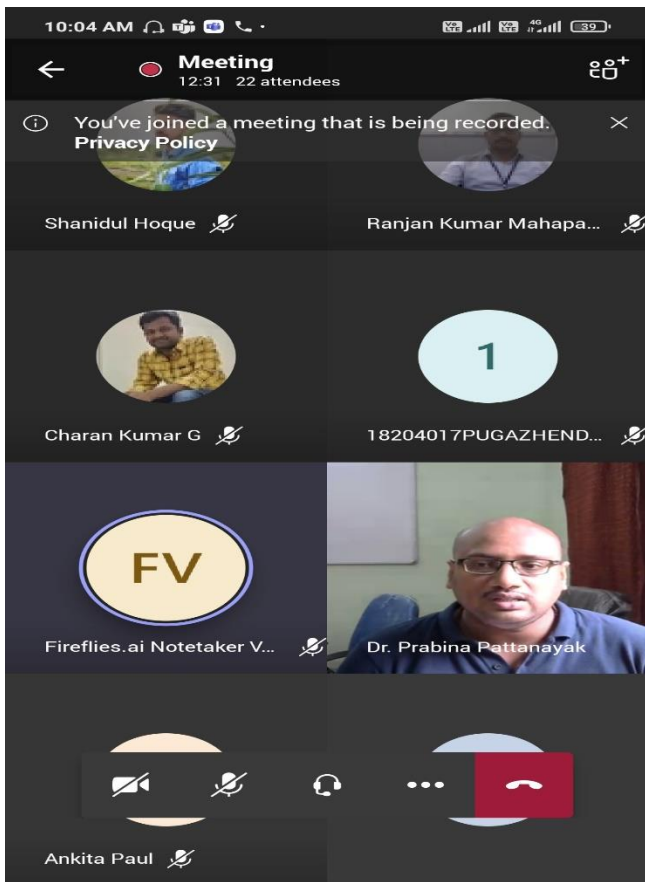
Share invite

In this meeting (27)

- Tasher Ali Sheikh
- Abhijit Sinha (Guest) Guest
- Anand J
- Anand Tiwari (Guest) Guest
- Ankita Paul (Guest) Guest
- ARUNRAJ (Guest) Guest
- Bhushan Vikas Mali
- Charan Kumar G
- Divya Mokara (Guest) Guest On hold
- Dr Sathesh K
- Dr Sumit Kumar Gupta

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### SELF-INTERFERENCE IN FD

- Self-interference ( $S_I$ )  $\gg$  Signal of interest ( $S$ ).
  - $\frac{S_I}{S} > 80 \text{ dB}$
- Solution in theory:
  - Assumption: The interference  $x_1(t) e^{j\omega t}$  is known.
  - Regime: This is a strong interference dominated regime.
  - Channel estimation: Estimate the SI channel  $h_I$  property.
  - SI cancellation: Subtract from the received signal.

Participants

Type a name

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Presenters (17) Mute all

- TS Tasher Ali Sheikh
- AP Ankita Paul (Guest)
- DL David Lalrochunga (Guest)
- PD DOLOI, PINKI External
- Dr. Sathesh K
- Dr. Sumit Kumar Gupta
- Dr. T. K. Sethuramalingam (G...)
- jencyruba External
- Mayavathi Padmayyagari (Gu...)
- Prince Jain External
- pugazhgame

System tray: 36°C Haze 15:00 15-10-2021

Media Playback Audio Video Tools View Help

System tray: 24°C Light rain 09:49 24-10-2021

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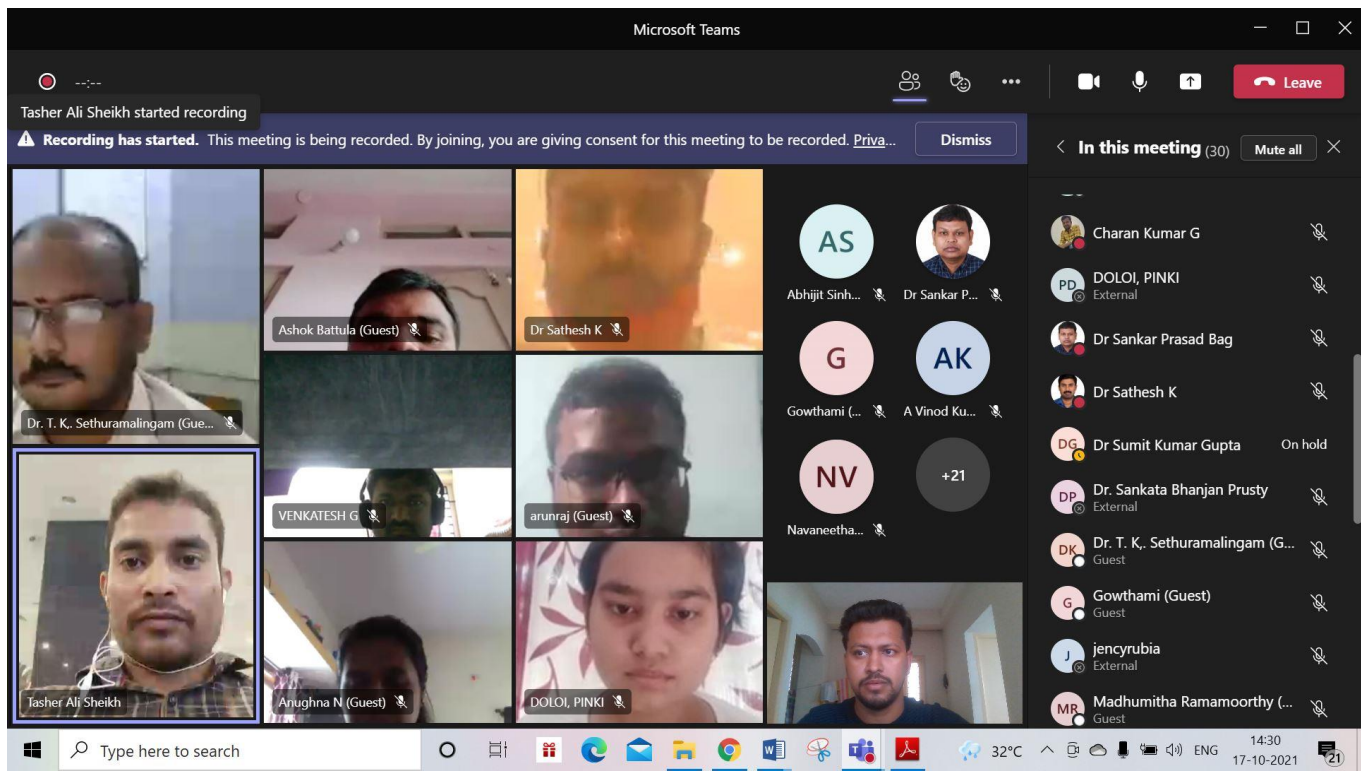
In this meeting (30) Mute all

Participants

In this meeting (30) Mute all

- AN Anughna N ...
- AS Abhijit Sinh...
- PD DOLOI, PINKI External
- Dr. Sankar P...
- G Gowthami (...)
- AK A Vinod Ku...
- Charan Kumar G
- Dr. Sankar Prasad Bag
- Dr. Sathesh K
- Dr. Sumit Kumar Gupta On hold
- Dr. Sankata Bhanjan Prusty External
- Dr. T. K. Sethuramalingam (G...)
- Gowthami (Guest) Guest
- jencyruba External
- Madhumitha Ramamoorthy (...)

System tray: 32°C 14:30 17-10-2021



Report Submitted by: **Dr. Tasher Ali Sheikh**, Assistant Professor, Dept. of ECE, & **Dr. Shanidul Hoque Sr.** Assistant Professor Department of Electronics and Communication Engineering

**No. of Participated – 287** (participants)

The resource person was: **Dr. Saif Khan Mohammed** is an Associate Professor in the department of Electrical Engineering at IIT Delhi, **Dr. Sudarshan Mukherjee** is an Assistant Professor in the Department of Electronics and Electrical Engineering at IIT Guwahati, **Dr. Swaminathan Ramabadrnan** is an Assistant Professor in the department of Electrical Engineering at IIT Indore, **Dr. Ferdous Ahmed Barbhuiya** is an Associate Professor & Associate Dean (R & D) in the department of Computer Science and Engineering at IIIT Guwahati, **Dr. Sudip Biswas** is an Assistant Professor in the department of Electronics and Communication Engineering at IIIT Guwahati, **Dr. Wasim Arif** is an Assistant Professor in the department of Electronics and Communication Engineering at NIT Silchar, **Dr. Surajit Kundu** is an Assistant Professor in the department of Electronics and Communication Engineering at NIT Sikkim, **Dr. Prabina Pattanayak** is an Assistant Professor in the department of Electronics and Communication Engineering at NIT Silchar, **Dr. Surajit Kundu** is an Assistant Professor in the department of Electronics and Communication Engineering at NIT Sikkim, **Dr. Özlem Tugfe Demir**, PDF at KTH Royal Institute of Technology, Sweden.

The department of Electronics and Communication Engineering, MITS, Madanapalle organized a one-week short-term course on the topic “**Future Opportunities and Challenges in 5G Technology (FOC-5G) from 13th Oct to 17th Oct 2021**”.

Dr. Tasher Ali Sheikh, Assistant Professor and Dr. Shanidul Hoque Sr. Assistant Professor in the Department of ECE, MITS Madanapalle coordinate this event. The Chief Patron of this event was Dr. N. Vijayabhaskar Choudary, Secretary & Correspondent, MITS. The Patron of this event was Prof. (Dr.) C. Yuvaraj, Principal of MITS and Convener for the event was Dr. P.

Ramanathan, VP, MITS and Dr. S. Rajasekaran, HoD, Dept. of ECE, MITS, Madanapalle.

In this STC on **Day-1** first session from 10.00AM to 1.00PM of this STC **Dr. Özlem Tugfe Demir** was enlighten with the fundamentals of User-Centric Cell-Free Massive MIMO potential features of cell free massive MIMO and its applications. In the Day-1 second session from 2.00PM to 5.00PM **Dr. Swaminathan Ramabadran** was given insights on 5G Communications: Specifications, Use cases, and PHY Techniques.

On **Day-2** first session from 10.00AM to 1.00PM of this STC **Dr. Ferdous Ahmed Barbhuiya** was enlighten with the fundamentals of 5G and IoT, Challenges and Opportunities & potential features of IoT and its applications on 5G technology. In the Day-2 second session from 2.00PM to 5.00PM **Dr. Wasim Arif** was given insights on UAV Communication: Challenges and opportunities in 5G wireless communication networks and use cases.

On **Day-3** first session from 10.00AM to 1.00PM of this STC **Dr. Surajit Kundu** was delivered his valuable talk on 5G Technology from Antenna Engineer's perspective. He discussed about the concept of Cognitive Radio and MIMO along with the antenna design for UWB application. He also demonstrated on the designing of antenna in CST studio. In the Day-3 second session from 2.00PM to 5.00PM **Dr. Sudip Biswas** was given insights on in band full-duplex for next generation wireless communication. Sir, covered in his talk about the concept of 5G & beyond and full duplex communications along with motivation and challenges. He also covered Full duplex communication, full duplex IoT, use case example, HD and FD cellular networks, data driven design, data generation. The participants enjoyed the session.

On **Day-4** first session from 10.00AM to 1.00PM of this STC **Dr. Sudarshan Mukherjee** was delivered his valuable talk on Edge Computing in 5G: How it will work with massive MIMO? He discussed about the concept edge computing in 5G with massive MIMO along with its application. In the Day-4 second session from 2.00PM to 5.00PM **Dr. Saif Khan Mohammed** was given insights on Massive MIMO Systems. Sir, nicely discussed about the concept of massive MIMO systems, uniform linear array, mathematical derivation of massive MIMO system design.

On **Day-5** first session from 10.00PM to 1.00PM of this STC **Dr. Prabina Pattanayak** was delivered his valuable talk on Pilot Contamination and Its Mitigation for 5G and Beyond Communication Systems? He discussed about the motivation of pilot contamination, problem statement and methodology to resolve the pilot contamination effects.

In the Day-5 second session from 2.00PM onwards **Valedictory function** was conducted in presence of all the participants and resource persons. Dr. Shanidul Hoque welcome all the participants and Resource persons and Dr. K Sathesh spoken few words about the last 5 days lectures of this STC. We also taken the feedback of this STC from the participants. At last Dr. Tasher Ali Sheikh given vote of thanks to all the resource person, participants and also given thanks to the management of MITS, Principal sir, Vice principal sir, HoD ECE sir and all the faculty and staffs members of ECE dept for your support and cooperation. Also thank to the technical team of MITS for their constant support during the online session of this STC. The session is ended with some photo graph.

