

Project Title:

Project Number

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IITB Department:

Research Academy Themes:

Highlight which of the Academy's Theme(s) this project will address?

(Feel free to nominate more than one. For more information, see www.iitbmonash.org)

1. **Advanced computational engineering, simulation and manufacture**
2. Infrastructure Engineering
3. Clean Energy
4. Water
5. Nanotechnology
6. Biotechnology and Stem Cell Research

The research problem

Define the problem

The fifth generation (5G) wireless communications networks aim at accommodating diverse traffic requirements ranging from high rate traffic for video streaming to low rate traffic with very latency for control and gaming applications.

The key technologies currently proposed to achieve such goals are based on mm-wave communications and massive MIMO.

As modulations, various multicarrier techniques are being considered which can easily adapt to the above requirements

The investigation for channel coding is still fully open and faces the challenge of designing codes which can easily adapt to different block lengths to satisfy the different latency requirements.

Project aims

Define the aims of the project

The project aims at designing suitable codes for the various physical layer techniques taking into account the multiple users activity in a wireless network.

Expected outcomes

Highlight the expected outcomes of the project

The project aims at designing suitable codes for the various physical layer techniques taking into account the multiple users activity in a wireless network.

A minimum of three publications in Q1 journals in the field
Possible contribution to future standards.

How will the project address the Goals of the above Themes?

Describe how the project will address the goals of one or more of the 6 Themes listed above.

Capabilities and Degrees Required

List the ideal set of capabilities that a student should have for this project. Feel free to be as specific or as general as you like. These capabilities will be input into the online application form and students who opt for this project will be required to show that they can demonstrate these capabilities.

It is mandatory to have a very solid MTech level background in advanced wireless communications, information theory, and coding theory. Applicants not having done at least two out of these three formal courses in their masters with good grade/percentage will not be called for interview.

Degree in Electrical Engineering/Electronics and Communication Engineering is mandatory.

Potential Collaborators

Please visit the IITB website www.iitb.ac.in OR Monash Website www.monash.edu to highlight some potential collaborators that would be best suited for the area of research you are intending to float.

Please provide a few key words relating to this project to make it easier for the students to apply.

Wireless communications, error correcting codes