

## Webinar on Graph Theory and its Applications-Report

The department of Mathematics, Loyola College, Chennai conducted the webinar on *Graph theory and its applications* on 24th September 2021 for the following objectives:

- To familiarize with graph algorithms.
- To introduce the notion of colouring in graphs and the variations of graph colouring.
- To define various NP-complete problems and their interpretations to real life situations.

The resource person was Dr. K. Kaliraj, Assistant professor, Ramanujan Institute for Advanced Study in Mathematics, University of Madras, Chennai 600 005.

The webinar was started with a prayer song followed by the welcome address by Dr. D. Antony Xavier, Head of the Department. The need of research and growing research prospects in Graph theory were emphasized by him.

The resource person was introduced by Dr. S. Ruth Julie Kavitha, Assistant professor, Department of Mathematics.

Dr. K. Kaliraj, the resource person started his talk with basic definitions of graph theory, explained graph colouring problem and illustrated its applications in Airline industry, traffic signal design, fish ecology etc. A few variations of colouring problem were also mentioned.

Optimization of the job scheduling problem using digraph and shortest path problem using weighted graph were demonstrated.

Spectral graph theory was introduced after recalling the definition of characteristic polynomial, eigen value and eigen vector of matrices. Energy graphs and graph polynomial or interlacing polynomial were also discussed. These research topics were well received by the participants.

There was a Q & A session and the webinar was ended with vote of thanks by Dr. Chris Monica M., Assistant Professor, Department of Mathematics.

A total of 115 participants attended the webinar. The webinar enlightened the participants with applications of graph theoretical concepts. The webinar provided the opportunities to learn how to formulate a real-life situation using graph theoretic models and the connection between graph theory and algebra.

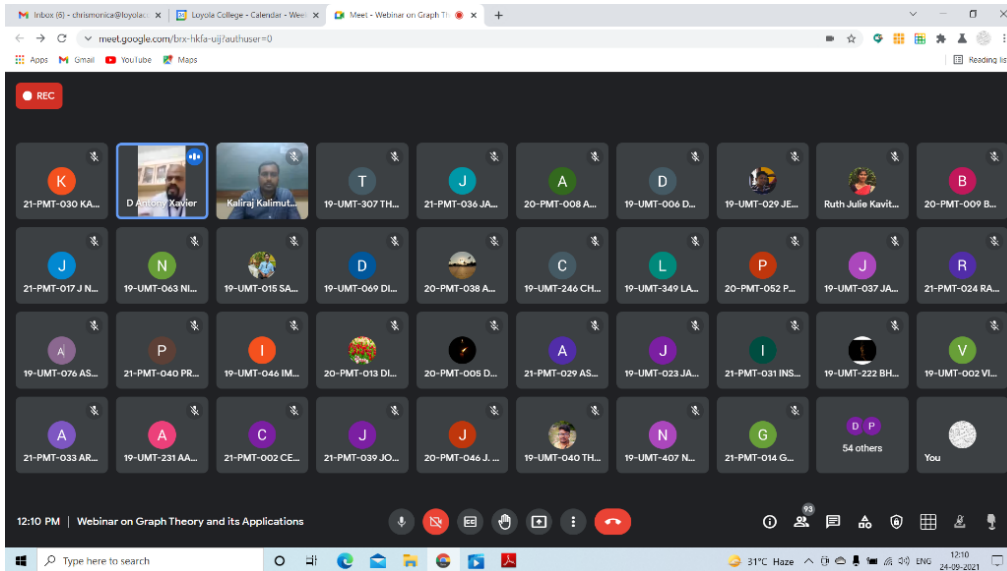
### **Conveners of the Webinar:**

1. Dr. Chris Monica M.
2. Dr. M. Arockiaraj

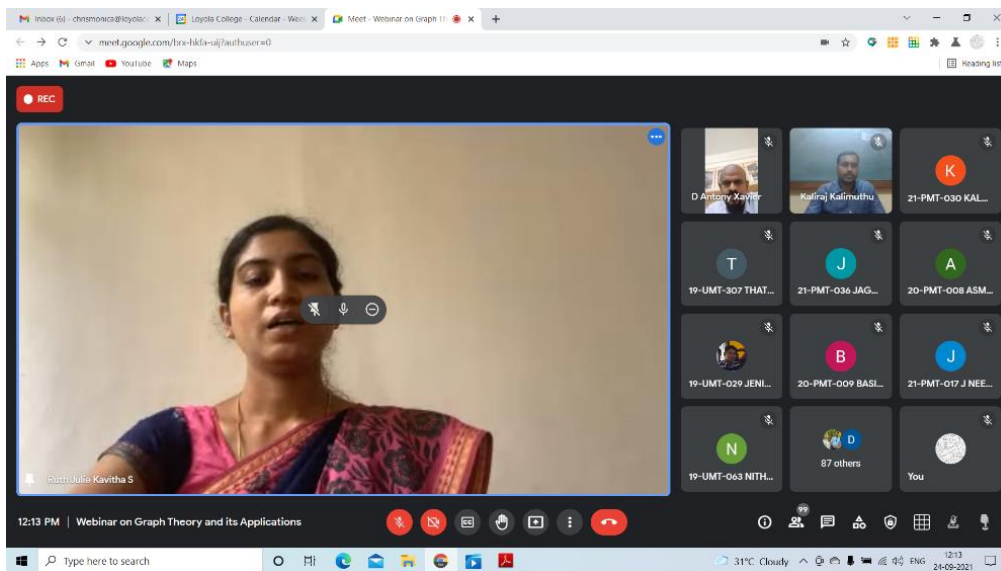
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**Date and Time: September 24, 2021, 12.00 noon**

**Google Meet Video call link: <https://meet.google.com/brx-hkfa-ujj>.**



**Dr. D. Antony Xavier, Head of the department delivering the welcome address**

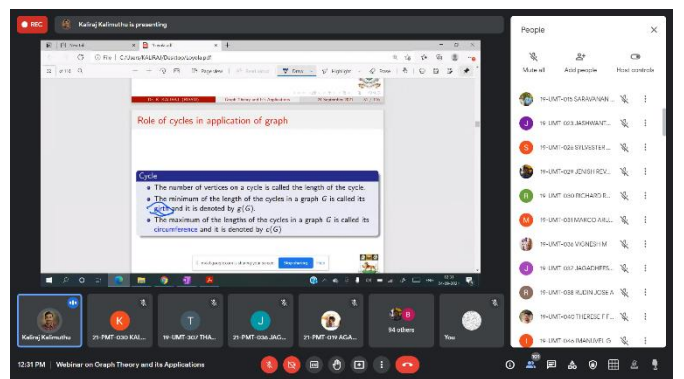
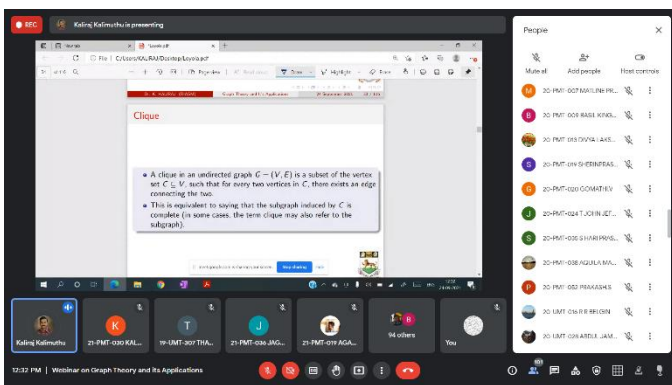
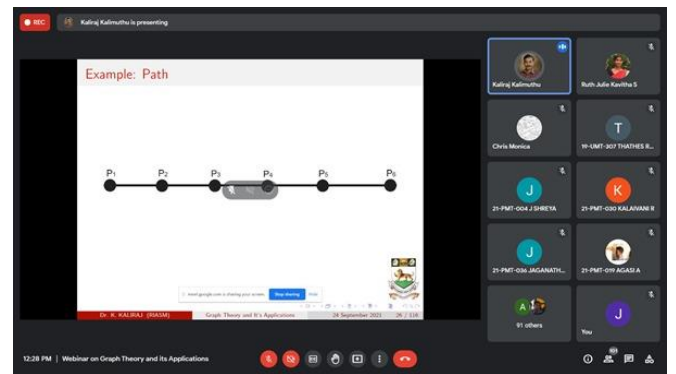
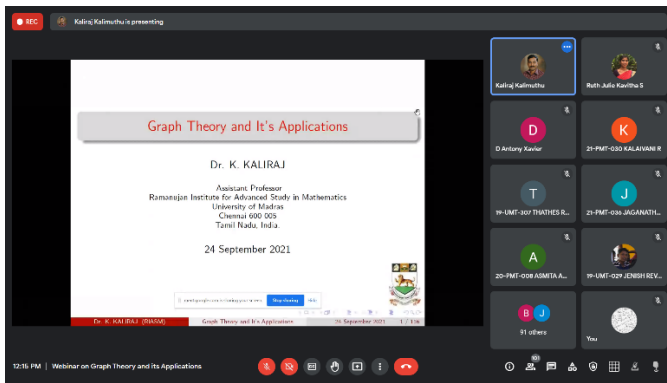


**Dr. S. Ruth Julie Kavitha introducing the resource person - Dr. K. Kaliraj**

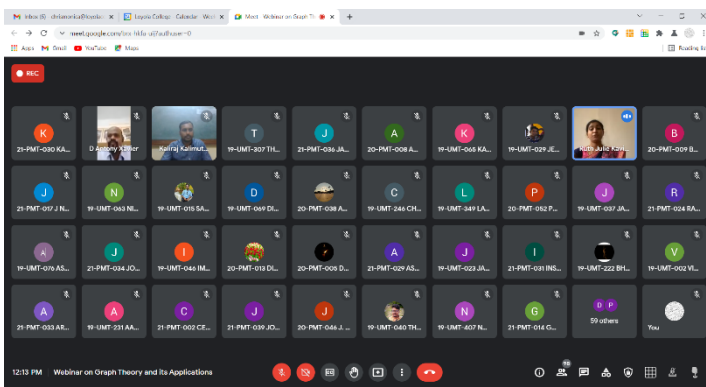
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Dr. K. Kaliraj delivering the talk

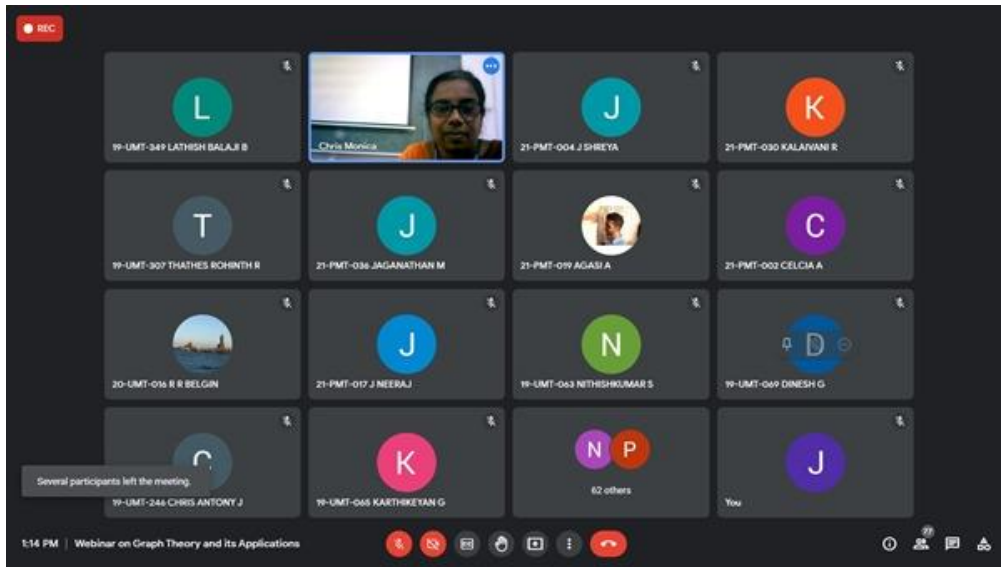


Presentation by Dr. K. Kaliraj



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## Participants listening the talk



**Dr. Chris Monica M. giving vote of thanks speech**