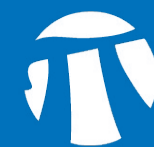


Emergent Research:

The PIMS Postdoctoral Fellow Seminar



Pacific Institute *for the*
Mathematical Sciences

October 25, 2023 | 9:30am Pacific

On the eigenvalues of the graphs $D(5, q)$

ABSTRACT:

In 1995, Lazebnik and Ustimenko introduced the family of q -regular graphs $D(k, q)$, which is defined for any positive integer k and prime power q . The connected components of the graph $D(k, q)$ have provided the best-known general lower bound on the size of a graph for any given order and girth to this day. Furthermore, Ustimenko conjectured that the second largest eigenvalue of $D(k, q)$ is always less than or equal to $2\sqrt{q}$, indicating that the graphs $D(k, q)$ are good expanders. In this talk, we will discuss some recent progress on this conjecture. This includes the result that the second largest eigenvalue of $D(5, q)$ is less than or equal to $2\sqrt{q}$ when q is an odd prime power. This is joint work with Vladislav Taranchuk.



Himanshu Gupta

PIMS PDF, University of Regina

SPEAKER BIO:

Himanshu Gupta is a PIMS postdoc at the University of Regina under the sponsorship of Prof. Shaun Fallat. The main focus of His research is Algebraic Graph Theory, the study of graphs using algebraic methods. He enjoys working with Matrices, Groups, Finite Fields, and other algebraic objects to study various structural properties of graphs.

Himanshu grew up in a small city called Sirsa in northern India. He obtained his Ph.D. in Mathematics at the University of Delaware in 2023 under the supervision of Prof. Sebastian Cioaba. Prior to that, he completed a Master's degree in Mathematics at the IISc, Bangalore under the guidance of Prof. Arvind Ayyer.

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