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List of Publications

Research papers included in this thesis have been published/communicated in international journals are listed as follows:

1. **Vinod Kumar** and Krishnendra Shekhawat, A Transformation Algorithm to Construct a Rectangular Floorplan, Theoretical Computer Science, 871 (2021) 94–106, https://doi.org/10.1016/j.tcs.2021.04.014.

2. **Vinod Kumar** and Krishnendra Shekhawat, Rectangularly Dualizable Graphs: Area-Universality, Advances and Applications in Discrete Mathematics, 28 (2021) 75-91 http://dx.doi.org/10.17654/DM028010075.

3. **Vinod Kumar** and Krishnendra Shekhawat, A Theory of Rectangularly Dualizable Graphs, arXiv:2102.05304. **(Communicated)**

4. **Vinod Kumar** and Krishnendra Shekhawat, Transformations of Rectangularly Dualizable Graphs, arXiv:2101.03505. **(Communicated)**

5. **Vinod Kumar** and Krishnendra Shekhawat, Uniqueness of Rectangularly Dualizable Graphs. **(Communicated)**

6. **Vinod Kumar** and Krishnendra Shekhawat, Edge-Reducible Rectangularly Dualizable Graphs. **(Communicated)**

7. **Vinod Kumar** and Krishnendra Shekhawat, Constructing maximal rectangular duals. **(Communicated)**

Conferences

The following works have been presented in the International conferences.

1. Reducible Rectangular Floorplans, International Conference and 22nd Annual Convention of Vijnana Parishad of India on Advances in Operations Research, Statistics and Mathematics (AOSM 2019), Department of Mathematics, BITS Pilani, Pilani Campus, Rajasthan, Dec. 28th-30th, 2019.

2. Reducible Rectangular Floorplans of Planar graphs, International conference on Recent Advances in Computational Mathematics and Engineering, Department of Applied Science and Humanities, B. K. Birla Institute of Engineering and Technology, Pilani, Rajasthan, March 19th-21th, 2021.

3. Constructing Maximal Rectangular Dualizable Graphs, International Conference on Discrete Mathematics and Combinatorics, Department of Postgraduate Studies in Mathematics, Poornaprajna College and Postgraduate Centre, Udupi, July 22th-23th, 2021.

Brief Biography of the Candidate

Vinod Kumar earned Master of Science in Mathematics in 2014 from Guru Jambheshwer University of Science and Technology, Hisar, Haryana. After that, he taught at Guru Jambheshwer University of Science and Technology, Hisar, Haryana and Govt. P.G. college Hisar. Later on, he joined the Department of Mathematics, Birla Institute of Technology and Science, Pilani, Pilani Campus as a research scholar at Birla Institute of Technology and Science Pilani, Pilani Campus to pursue his Doctor of Philosophy (Ph.D.) degree under the supervision of Prof. Krishnendra Shekhawat. He has published two research papers in peer-reviewed international journal of repute and presented three papers in international conferences.

Brief Biography of the Supervisor

Prof. Krishnendra Shekhawat is an Associate Professor at the Department of Mathematics, Birla Institute of Technology and Science, Pilani, Rajasthan. He has completed his M. Sc. (Mathematics) from IIT Delhi in 2008 and received his Doctoral of Philosophy in 2013 from the University of Geneva, Switzerland. He has postdoctoral experience at Department of Computer Science, Aix-Marseille University, France and at Design and Computation Group, University of Lisbon, Portugal. Thereafter, he has joined the Department of Mathematics at Birla Institute of Technology and Science Pilani, Pilani Campus on April 01, 2016. His research interests are in the area of geometric graph algorithms for floorplanning in Architectural buildings. He has published a good amount of research articles in reputed international journals. He is also the principal investigator of a major project supported by SERB-DST.