On rainbow domination regular graphs

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In [1], a d-regular graph X is called d-rainbow domination regular or d-RDR, if its d-rainbow domination number $\gamma_{rd}(X)$ attains the lower bound $n/2$ for d-regular graphs, where n is the number of vertices. In [2], some combinatorial constructions to construct new d-RDR graphs from existing ones are given and two general criteria for a vertex-transitive d-regular graph to be d-RDR are proven. A list of vertex-transitive 3-RDR graphs of small orders is then produced and their partial classification into families of generalized Petersen graphs, honeycomb-toroidal graphs and a specific family of Cayley graphs is given by investigating the girth and local cycle structure of these graphs. In the talk, some more recent results and open problems on d-RDR graphs will be presented.

References

[1] KUZMAN, Boštjan. On k-rainbow domination in regular graphs. *Discrete applied mathematics*. 2020, vol. 284, pp. 454 – 464.

[2] KUZMAN, Boštjan. On cubic rainbow domination regular graphs. *Discrete applied mathematics*. 2025, vol. 373, pp. 26 – 38.