

Some constructions of strongly regular graphs and digraphs

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(Joint work with Dean Crnković and Francesco Pavese)

Abstract

In this talk, we will present a connection between some finite incidence structures - partial geometric designs [1] or a $1\frac{1}{2}$ -design [3], special partially balanced incomplete block designs [2], directed strongly regular graphs and strongly regular graphs. Further, we study their properties and give a technique for constructing directed strongly regular graphs by using strongly regular graphs that have a nice family of intriguing sets. The talk is based on the work presented in [4].

References

- [1] R. C Bose, S. S. Shrikhande, N. M. Singhi, Edge regular multigraphs and partial geometric designs, *Proc. Internat. Colloq. Combin. Theory*, 17 (1976), 49–81.
- [2] W. G. Bridges, M. S. Shrikhande, Special partially balanced incomplete block designs and associated graphs, *Discrete Math.*, 9 (1974), 1–18.
- [3] A. Neumaier, $t\frac{1}{2}$ -designs, *J. Combin. Theory, Ser. A*, 28 (1980), 226–248.
- [4] D. Crnković, F. Pavese, A. Švob, Intriguing sets of strongly regular graphs and their related structures, *Contrib. Discrete Math.* 18 (2023), 66-89.