6th International Conference on Applied Informatics Eger, Hungary, January 27–31, 2004.

Combinatorial Designs and Interconnection Networks

Gábor Fazekas

Department of Information Technology, University of Debrecen e-mail: fazekasg@inf.unideb.hu

Abstract

Combinatorial designs have had substantial application in the design of statistical experiments and in the theory of error correcting codes for a long time. Perhaps, because of their very strong symmetrical properties and balance their applications in the computer science have continuously emerged. The interpretation of designs as special subsets in polynomial metric spaces allows us to get rid of the details of the actual combinatorial construction and obtain general results valid even for other type of designs. [2,3] Following some ideas formulated in [1] we are going to present some models and problems of interconnection networks based on combinatorial designs.

Categories and Subject Descriptors: C.2.1 [Network Architecture and Design]: Network topology; G.2.2 [Graph Theory] (F.2.2): Hypergraphs, Network problems

Key Words and Phrases: Combinatorial design, interconnection network, node, switch, link, distance, diameter.

References

- C.J. Colbourn, P.C. van Oorschot, Applications of combinatorial designs in computer science, ACM Computing Surveys, 21 (1989), 223–250.
- [2] Fazekas, G., V.I. Levenshtein, On upper bounds for code distance and covering radius of designs in polynomial metric spaces, *Journal of Combinatorial Theory, Series A*, Vol. 70, No. 2, May 1995, 267-288.
- [3] V.I. Levenshtein, Designs as maximal codes in polynomial metric spaces, Acta Applicandae Mathematicae Vol. 29 (1992), 1-82.