

Also available at <http://amc-journal.eu>  
ISSN 1855-3966 (printed edn.), ISSN 1855-3974 (electronic edn.)  
Ars Mathematica Contemporanea Volume 6, Issue 1, Year 2013, Pages 99–115

## On D. G. Higman's note on regular 3-graphs

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### Abstract

We introduce the notion of a  $t$ -graph and prove that regular 3-graphs are equivalent to cyclic antipodal 3-fold covers of a complete graph. This generalizes the equivalence of regular two-graphs and Taylor graphs. As a consequence, an equivalence between cyclic antipodal distance regular graphs of diameter 3 and certain rank 6 commutative association schemes is proved. New examples of regular 3-graphs are presented.

**Keywords:** Antipodal graph, association scheme, distance regular graph of diameter 3, Godsil-Hensel matrix, group ring, Taylor graph, two-graph.

Math Sci Net: [05E30 \(05B20 05E18\)](#)

## O D. G. Higmanovi opombi o regularnih 3-grafih

### Povzetek

Vpeljemo pojem  $t$ -grafa in dokažemo, da so regularni 3-grafi ekvivalentni cikličnim antipodnim 3-listnim krovom polnega grafa. To je posplošitev ekvivalence regularnih 2-grafov in Taylorjevih grafov. Kot posledico dokažemo ekvivalenco med cikličnimi antipodnimi razdaljno-regularnimi grafi premera 3 in nekaterimi komutativnimi asociativnimi shemami ranga 6. Predstavimo tudi nove primere regularnih 3-grafov.

**Ključne besede:** Antipodni grafi, asociativna shema, razdaljno-regularen graf premera 3, Godsil-Henslova matrika, grupni kolobar, Taylorjev graf, 2-graf.