

ALMOST SELF-COMPLEMENTARY 3-UNIFORM HYPERGRAPHS

LATA N. KAMBLE

Department of Mathematics
Abasaheb Garware College
Karve Road, Pune-411004

e-mail: lata7429@gmail.com

CHARUSHEELA M. DESHPANDE

AND

BHAGYASHREE Y. BAM

Department of Mathematics
College of Engineering Pune
Pune-411006

e-mail: dcm.maths@coep.ac.in
bpa.maths@coep.ac.in

Abstract

It is known that self-complementary 3-uniform hypergraphs on n vertices exist if and only if n is congruent to 0, 1 or 2 modulo 4. In this paper we define an almost self-complementary 3-uniform hypergraph on n vertices and prove that it exists if and only if n is congruent to 3 modulo 4. The structure of corresponding complementing permutation is also analyzed. Further, we prove that there does not exist a regular almost self-complementary 3-uniform hypergraph on n vertices where n is congruent to 3 modulo 4, and it is proved that there exist a quasi regular almost self-complementary 3-uniform hypergraph on n vertices where n is congruent to 3 modulo 4.

Keywords: uniform hypergraph, self-complementary hypergraph, almost complete 3-uniform hypergraph, almost self-complementary hypergraph, quasi regular hypergraph.

2010 Mathematics Subject Classification: 05C65.

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Received 30 September 2015

Revised 23 February 2016

Accepted 3 March 2016