

## Direct sum of CI-groups

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The investigation of CI-groups started with the conjecture of *Ádám*. Using the terminology later introduced by Babai, he conjectured that every cyclic group is a CI-group. A group  $G$  is called a CI-group when two Cayley graphs of  $G$  are isomorphic only if there is an automorphism of the group  $G$  which induces an isomorphism between the two Cayley graphs. It was proved by Babai and Frankl that a CI-group, which is also a  $p$ -group can only be elementary abelian  $p$ -group, quaternion group or cyclic group of small order. Several authors contributed to the description of CI-groups and a fairly short list of possible CI-groups was described by Li, Lu and Pálffy. Most of the candidates are abelian groups. Kovács and Muzychuk conjectured that the direct sum of CI-groups of relative prime order is a CI-group. The list provided by Li, Lu and Pálffy shows that this is one of the main questions in this area.

We contribute towards this conjecture by proving that if  $H$  is an abelian CI-group,  $q$  is a prime which does not divide  $|H|$ , then  $H \times \mathbb{Z}_q$  is a CI-group. The proof relies on two different approaches. One of them uses elementary permutation theory tools worked out in a previous paper about CI-groups of order  $p^3q$  but the most important technique is the theory of Schur rings used by Kovács and Muzychuk.

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