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## On colour-preserving automorphisms of Cayley graphs

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**Abstract:** We study the automorphisms of a Cayley graph that preserve its natural edge-colouring. More precisely, we are interested in groups  $G$ , such that every such automorphism of every connected Cayley graph on  $G$  has a very simple form: the composition of a left-translation and a group automorphism. We find classes of groups that have the property, and we determine the orders of all groups that do not have the property. We also have analogous results for automorphisms that permute the colours, rather than preserving them.

**Keywords:** Cayley graph, automorphism, colour-preserving, colour-permuting.

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## O barve-ohranjajočih avtomorfizmih Cayleyevih grafov

**Povzetek:** Študiramo avtomorfizme Cayleyevega grafa, ki ohranjajo njegovo naravno barvanje povezav. Natančneje, zanimajo nas takšne grupe  $G$ , pri katerih ima vsak tak avtomorfizem vsakega povezanega Cayleyevega grafa na grupi  $G$  zelo enostavno obliko: je kompozitum leve translacije in avtomorfizma grupe. Najdemo razrede grup, ki imajo to lastnost, in določimo rede vseh grup, ki nimajo te lastnosti. Imamo tudi analogne rezultate za avtomorfizme, ki barv ne ohranjajo, ampak jih permutirajo.

**Ključne besede:** Cayleyev graf, avtomorfizem, barve-ohranjajoč, barve-permutirajoč.