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## The clone cover

*Aleksander Malnič, Tomaž Pisanski, Arjana Žitnik*

**Abstract:** Each finite graph on  $n$  vertices determines a special  $(n-1)$ -fold covering graph that we call the clone cover. Several equivalent definitions and basic properties about this remarkable construction are presented. In particular, we show that for  $k \geq 2$ , the clone cover of a  $k$ -connected graph is  $k$ -connected, the clone cover of a planar graph is planar and the clone cover of a hamiltonian graph is hamiltonian. As for symmetry properties, in most cases we also understand the structure of the automorphism groups of these covers. A particularly nice property is that every automorphism of the base graph lifts to an automorphism of its clone cover. We also show that the covering projection from the clone cover onto its corresponding 2-connected base graph is never a regular covering, except when the base graph is a cycle.

**Keywords:** Covering projection, canonical cover, regular cover, automorphisms.

## Klonski krov

**Povzetek:** Vsak končen graf na  $n$  vozliščih določa posebni  $(n-1)$ -listni krovni graf, ki ga imenujemo klonski krov. Predstavimo več ekvivalentnih definicij in osnovnih lastnosti v zvezi s to zanimivo konstrukcijo. Tako npr. pokažemo, da je za  $k \geq 2$  klonski krov  $k$ -povezanega grafa  $k$ -povezan, da je klonski krov ravninskega grafa ravninski in da je klonski krov hamiltonskega grafa hamiltonski. Kar se tiče simetrijskih lastnosti, v večini primerov razumemo tudi strukturo grupe avtomorfizmov teh krovov. Posebej lepa lastnost je na primer, da se vsak avtomorfizem baznega grafa dvigne do avtomorfizma njegovega klonskega krova. Pokažemo tudi, da krovna projekcija klonskega krova na ustrezni 2-povezani bazni graf nikoli ni regularen krov, razen kadar je osnovni graf cikel.

**Ključne besede:** Krovna projekcija, kanonični krov, regularni krov, avtomorfizmi.