

Cube-contractions in 3-connected quadrangulations

Yusuke Suzuki

Abstract: A 3-connected quadrangulation of a closed surface is said to be \mathcal{K}'_3 -irreducible if no face- or cube-contraction preserves simplicity and 3-connectedness. In this paper, we prove that a \mathcal{K}'_3 -irreducible quadrangulation of a closed surface except the sphere and the projective plane is either (i) irreducible or (ii) obtained from an irreducible quadrangulation H by applying 4-cycle additions to $F_0 \subseteq F(H)$ where $F(H)$ stands for the set of faces of H . We also determine \mathcal{K}'_3 -irreducible quadrangulations of the sphere and the projective plane. These results imply new generating theorems of 3-connected quadrangulations of closed surfaces.

Keywords: Quadrangulation, closed surface, generating theorem.

Math. Subj. Class.: 05C10

Kubične kontrakcije v 3-povezanih kvadrangulacijah

Yusuke Suzuki

Povzetek: Za 3-povezano kvadrangulacijo sklenjene ploskve pravimo, da je \mathcal{K}'_3 -ireducibilna, če nobena skrčitev lic oziroma kock ne ohranja enostavnosti in 3-povezanosti. V tem članku dokažemo, da je \mathcal{K}'_3 -ireducibilna kvadrangulacija sklenjene ploskve z izjemo sfere in projektivne ravnine bodisi (i) ireducibilna bodisi (ii) jo lahko dobimo iz ireducibilne kvadrangulacije H z dodajanjem 4-ciklov k $F_0 \subseteq F(H)$, kjer $F(H)$ pomeni množico lic kvadrangulacije H . Določimo tudi \mathcal{K}'_3 -ireducibilne kvadrangulacije sfere in projektivne ravnine. Ti rezultati implicirajo nove izreke o generiranju 3-povezanih kvadrangulacij sklenjenih ploskev.

Ključne besede: Kvadrangulacija, sklenjena ploskev, izrek o generiranju.

Math. Subj. Class.: 05C10