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## Mirrors of reflections of regular maps

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**Abstract:** A regular map  $\mathcal{M}$  is an embedding of a finite connected graph into a compact surface  $S$  such that its automorphism group  $\text{Aut}^+(\mathcal{M})$  acts transitively on the directed edges. A reflection of  $\mathcal{M}$  fixes a number of simple closed geodesics on  $S$ , which are called mirrors. In this paper, we prove two theorems which enable us to calculate the total number of mirrors fixed by the reflections of a regular map and the lengths of these mirrors. Furthermore, by applying these theorems to Hurwitz maps, we obtain some interesting results. In particular, we find an upper bound for the number of mirrors on Hurwitz surfaces.

**Keywords:** Riemann surface, regular map, Hurwitz map, reflection, mirror.

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## Zrcala zrcaljenj regularnih zemljevidov

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**Povzetek:** Regularen zemljevid  $\mathcal{M}$  je vložitev končnega povezanega grafa v kompaktno ploskev  $S$ , ki zadošča pogoju, da grupa avtomorfizmov  $\text{Aut}^+(\mathcal{M})$  deluje tranzitivno na usmerjenih povezavah. Zrcaljenje  $\mathcal{M}$  fiksira enostavne sklenjene geodetke na  $S$ , ki se imenujejo zrcala. V tem članku dokažemo dva izreka, ki nam omogočata izračunati število zrcal, določenih z zrcaljenji regularnega zemljevida, pa tudi dolžine teh zrcal. Nadalje, z uporabo teh izrekov na Hurwitzevih zemljevidih, dobimo nekaj zanimivih rezultatov. Tako npr. najdemo zgornjo mejo za število zrcal na Hurwitzevih zemljevidih.

**Ključne besede:** Riemannova ploskev, regularen zemljevid, Hurwitez zemljevid, zrcaljenje, zrcalo.

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