Strong geodetic problem on complete multipartite graphs

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Received 15 June 2018, accepted 18 June 2019, published online 13 November 2019

Abstract

The strong geodetic problem is to find the smallest number of vertices such that by fixing one shortest path between each pair, all vertices of the graph are covered. In this paper we study the strong geodetic problem on complete bipartite graphs. Some results for complete multipartite graphs are also derived. Finally, we prove that the strong geodetic problem restricted to (general) bipartite graphs is NP-complete.

Keywords: Geodetic problem, strong geodetic problem, (complete) bipartite graphs, (complete) multipartite graphs.

Math. Subj. Class.: 05C12, 05C70, 68Q17

*The authors would like to thank Sandi Klavžar and Valentin Gledel for a number of helpful conversations and suggestions. We also thank the (anonymous) referee for a detailed reading of the paper and numerous suggested improvements.

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Krepki geodetski problem na polnih večdelnih grafih

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Prejeto 15. junija 2018, sprejeto 18. junija 2019, objavljeno na spletu 13. novembra 2019

Povzetek

Pri krepkem geodetskem problemu moramo poiskati najmanjše število vozlišč, tako da z izborom ene najkrajše poti med vsakim parom vozlišč pokrijemo vsa vozlišča grafa. V tem članku preučujemo krepko geodetsko število na polnih dvodelnih grafih. Izpeljemo tudi nekatere rezultate za polne večdelne grafe. Dokažemo tudi, da je krepki geodetski problem na (splošnih) dvodelnih grafih NP-poln.

Ključne besede: Geodetski problem, krepki geodetski problem, (polni) dvodelni grafi, (polni) večdelni grafi.

Math. Subj. Class.: 05C12, 05C70, 68Q17

* Avtorja bi se rada zahvalila Sandiju Klavžarju in Valentinu Gledelu za številne koristne razprave in predloge. Zahvaljujeva se tudi (anonimnemu) recenzentu za natančno branje članka in številne predlagane izboljšave.

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