

Also available at <http://amc-journal.eu>
ISSN 1855-3966 (printed edn.), ISSN 1855-3974 (electronic edn.)
Ars Mathematica Contemporanea Volume 2, Issue 1, Year 2009, Pages 35-40

Large sets of long distance equienergetic graphs

Dragan Stevanović

Abstract

Distance energy of a graph is a recent energy-type invariant, defined as the absolute deviation of the eigenvalues of the distance matrix of the graph. Two graphs of the same order are said to be distance equienergetic if they have equal distance energy, while they have distinct spectra of their distance matrices. Examples of pairs of distance equienergetic graphs appear in the literature already, but most of them have diameter two only.

We describe here the distance spectrum of a special composition of regular graphs, and, as an application, we show that for any $n \geq 3$, there exists a set of $n + 1$ distance equienergetic graphs which have order $6n$ and diameter $n - 1$ each.

Keywords: Distance spectrum, distance energy, join, regular graphs.

Math. Subj. Class.: 05C50

Math Sci Net: [05C50 \(05C12\)](#)

Velike množice na velike razdalje enako-energetiziranih grafov

Povzetek

Razdaljna energija grafa je nedavno vpeljana invarianta energetskega tipa, definirana kot absoluten odklon lastnih vrednosti distančne matrike grafa. Dva grafa istega reda se imenujeta razdaljno enako-energetizirana, če imata enako razdaljno energijo, spektra njunih razdaljnih matrik pa sta različna. Primeri parov razdaljno enako-energetiziranih grafov se že pojavljajo v literaturi, toda večina od njih ima samo premer dva.

Tukaj opišemo razdaljni spekter posebne kompozicije regularnih grafov, in na podlagi tega pokažemo, da za vsak $n \geq 3$ obstaja množica $n + 1$ razdaljno enako-energetiziranih grafov, ki imajo vsi red $6n$ in premer $n - 1$.

Ključne besede: Razdaljni spekter, razdaljna energija, spoj, regularni grafi.