Realizing degree sequences with graphs having nowhere-zero 3-flows

Rong Luo

Department of Mathematical Sciences

Middle Tennessee State University

Abstract

The following open problem was proposed by Archdeacon: Characterize all graphical sequences π such that some realization of π admits a nowhere-zero 3-flow. This open problem is solved in this paper with the following complete characterization: A graphical sequence $\pi = (d_1, d_2, \ldots, d_n)$ with minimum degree at least two has a realization that admits a nowhere-zero 3-flow if and only if $\pi \neq (3^4, 2)$, $(k, 3^k)$, $(k^2, 3^{k-1})$, where k is an odd integer.