

Bounding the size of equimatchable graphs of fixed genus

Ken-ichi Kawarabayashi
National Institute of Informatics
2 - 1 - 2 Hitotsubashi, Chiyoda-ku
Tokyo 101-8430, Japan
`k_keniti@nii.ac.jp`

Michael D. Plummer
Department of Mathematics
Vanderbilt University
Nashville, TN 37240, USA
`michael.d.plummer@vanderbilt.edu`

Abstract

A graph G is said to be *equimatchable* if every matching in G extends to (i.e., is a subset of) a maximum matching in G . In a 2003 paper, Kawarabayashi, Plummer and Saito showed that there are only a finite number of 3-connected equimatchable planar graphs. In the present paper, this result is extended by showing that in a surface of any fixed genus (orientable or non-orientable), there are only a finite number of 3-connected equimatchable graphs having a minimal embedding of representativity at least three. The proof makes use of the Gallai-Edmonds decomposition theorem for matchings.