

Meeting: 1004, Bowling Green, Kentucky, SS 2A, Special Session on Graph Theory

1004-05-53 **Mark Ellingham*** (mne@math.vanderbilt.edu), Department of Mathematics, SC 1326,
Vanderbilt University, Nashville, TN 37240, and **Ken-ichi Kawarabayashi**. *2-connected spanning
subgraphs with low maximum degree in locally planar graphs.*

We show that 4-connected graphs embedded on a surface with sufficient local planarity have a 2-connected spanning subgraph of maximum degree 3 with relatively few vertices of degree 3. More precisely, there exists a function $a(k, \varepsilon)$ such that for each $\varepsilon > 0$ and nonnegative integer k , if G is a 4-connected graph embedded on a surface of Euler genus k with representativity (face-width) at least $a(k, \varepsilon)$, then G has a 2-connected spanning subgraph with maximum degree at most 3 in which the number of vertices of degree 3 is at most $\varepsilon|V(G)|$. This improves recent results due to Kawarabayashi, Nakamoto and Ota, and Böhme, Mohar and Thomassen. (Received January 12, 2005)