

1155-05-614

Michael Wigal*, School of Mathematics, Atlanta, GA 30332, and **Xingxing Yu**, School of Mathematics, Atlanta, GA 30332. *Large cycles in essentially 4-connected planar graphs.*

Tutte proved that every 4-connected planar graph contains a Hamilton cycle, but there are 3-connected n -vertex graphs whose longest cycles have length $\Theta(n^{\log_3 2})$. On the other hand, Jackson and Wormald proved that an essentially 4-connected n -vertex planar graph contains a cycle of length at least $(2n + 4)/5$, which was improved to $5(n + 2)/8$ by Fabrici *et al.* We improve this bound to $\lceil (2n + 6)/3 \rceil$ for $n \geq 6$ by proving a quantitative version of a result of Thomassen, and the bound is best possible. (Received January 21, 2020)