Caitlin Phifer* (caitlin@math.uri.edu). The Cycle Intersection Matrix and Applications to Planar Graphs.

Given a finite connected planar graph $G$ with $s$ finite faces, we define the cycle-intersection matrix, $C(G) = (c_{ij})$ to be a symmetric matrix of order $s \times s$ where $c_{ii}$ is the length of the cycle which bounds finite face $i$, and $c_{ij}$ the negative of the number of common edges in the cycles bounding faces $i$ and $j$ for $i \neq j$. We will show that $\det C(G)$ equals the number of spanning trees in $G$. We show an interesting connection between the determinant of $C(G)$ to the Fibonacci sequence when $G$ is a certain triangulation of an $n$-gon by non-overlapping diagonals. (Received September 05, 2013)