Hamiltonian Properties in Line Graphs and Iterated Line Graphs

Yehong Shao
Arts and Science, Ohio University Southern, Ironton, OH 45638

Abstract

The *line graph* of a graph G, denoted by $L(G)$ or $L^1(G)$, has $E(G)$ as its vertex set, where two vertices in $L(G)$ are adjacent if and only if the corresponding two edges in G have a common vertex. Iteratively, $L^n(G) = L(L^{n-1}(G))$ and $L^0(G) = G$. Thomassen conjectured that every 4-edge-connected line graph is Hamiltonian. Chartrand introduced the Hamiltonian index of a graph as the minimum number n such that $L^n(G)$ is Hamiltonian. We present results towards Thomassen's conjecture and results related to the Hamiltonian index.