

Decoding Convergence: Tracing the sequences of H -Line Graphs

Alvaro Carbonero Gonzales*, University of Nevada, Las Vegas.

Let H be a connected graph on at least 3 vertices. For any graph G , the H -line graph of G , denoted by $HL(G)$, is that graph whose vertices are the edges of G and where two vertices of $HL(G)$ are adjacent if they are adjacent in G and lie in a common copy of H . The talk will focus on the iteration of this procedure, where we use $HL^k(G)$ to denote the k -th iteration. We will focus on convergence. A sequence $\{HL^k(G)\}$ is said to converge if there exists a positive integer k such that $HL^k(G) \cong HL^{k+1}(G)$. The case where H is a path of order n is full of surprising graphs that have a convergent sequence. This talk will start by covering the graphs H that have been studied in the past, and it will end by going over a new technique that tries to identify every graph with a convergent sequence when H is a path.

Keywords: line graph; H -line graphs; graph sequence