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Bonnie C. Jacob* (bcjntm@rit.edu). *A generalization of optimality of vertex rankings on infinite graphs.*

Given a graph G and a non-negative integer a , a function $f : V(G) \rightarrow \{a, a + 1, \dots, b\}$ is an $[a, b]$ -ranking of G if for $u, v \in V(G)$, $f(u) = f(v)$ implies that every uv path contains a vertex w such that $f(w) > f(u)$. That is, f is an $[a, b]$ -ranking of G if and only if the function defined by $g(v) = f(v) - a + 1$ is a k -ranking of G .

Conventionally, the optimality of a vertex k -ranking on a graph was evaluated based on the l_∞ norm of the vertex labels appearing in the ranking. However, by looking at $[a, b]$ -rankings — which generalize k -rankings — and considering more general notions of optimality such as the l_p norm for any $p \in [1, \infty)$, we are able to produce interesting results on the optimality of vertex rankings on infinite graphs. (Received September 25, 2012)