

RESTRICTED REACHABILITY IN INFINITE DIGRAPHS

MARÍA DEL ROCÍO SÁNCHEZ LÓPEZ

Faculty of Sciences, UNAM

e-mail: usagitsukinomx@ciencias.unam.mx

ROCÍO SÁNCHEZ-LÓPEZ AND HORTENSIA GALEANA-SÁNCHEZ

Institute of Mathematics, UNAM

e-mail: usagitsukinomx@ciencias.unam.mx, hgaleana@matem.unam.mx

Let H be a digraph, possibly with loops, and let D be a loopless digraph whose arcs are colored with vertices of H ; we call D an H -colored digraph. A directed path in D is an H -path if its sequence of arc colors forms a directed walk in H . An H -kernel of D is a set $N \subseteq V(D)$ such that no two distinct vertices of N are connected by an H -path, and for every vertex $u \in V(D) \setminus N$ there exists an H -path from u to some vertex of N .

From an H -colored digraph D , we construct two associated digraphs: the *color-class digraph*, which records which color transitions occur in D , and the *H -closure of D* , which records the existence of H -paths between vertices. In this talk, we will see conditions on these two digraphs that guarantee that D admits an H -kernel.

As a consequence of our main result, we obtain Richardson's theorem [1], a cornerstone of Kernel Theory for digraphs.

References

- [1] M. Richardson, Solutions of irreflexive relations. *Ann. Math.* 58(2)(1953) 573.