

1070-46-319

**Sarah E Wright\*** ([swright@holycross.edu](mailto:swright@holycross.edu)), Mathematics and Computer Science Department, College of the Holy Cross, 1 College Street, Worcester, MA 01610. *Graph Algebras, Aperiodicity, and Condition (F)*.

The condition “every cycle has an entry” first appeared in the literature in Kumjian, Pask, and Raeburn’s paper on Cuntz-Krieger algebras of directed graphs, where it was called Condition (L). It provides a necessary condition for simplicity of the associated graph algebra. This condition has been generalized to aperiodicity conditions in the theory of topological graphs (Katsura),  $k$ -graphs (Kumjian, Pask), and the unifying theory of topological  $k$ -graphs (Yeend). We’ll discuss the details of these generalizations as well as the theorems associated with them. We’ll then introduce a Condition (F) on the finite paths of a topological  $k$ -graph that is equivalent to the corresponding aperiodicity condition. Hence we obtain a condition which is much easier to check than the aperiodicity of infinite paths, which we’ll explore through some examples. (Received February 15, 2011)