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Sarah E. Wright* (swright@holycross.edu), Mathematics and Computer Science Dept.,
College of the Holy Cross, One College Street, Worcester, MA 01610. *Aperiodicity Conditions in
Topological k -Graphs.*

By generalizing what we think of as a graph we increase the class of C^* -algebras that can be viewed as graph-algebras. Two main generalizations are making the graphs multidimensional k -graphs (Kumjian and Pask) and giving the vertex and edge sets topologies (Katsura). Yeend combined these two generalizations and constructed topological k -graphs in his thesis. We'll see an introduction to each of these generalizations. Condition (L), "every cycle has an entry" first appeared in the literature in Kumjian, Pask, and Raeburn's paper on Cuntz-Krieger algebras of directed graphs. It provides a necessary condition for simplicity of the graph algebra. This condition has been generalized to the theory of topological graphs, k -graphs, and topological k -graphs. We'll see how these conditions present themselves in various examples as well as evidence of their importance in each of the theories. Each generalization of the aperiodicity condition, particularly those in the k -dimensional case, can be difficult to check for. We'll give some equivalent conditions to aperiodicity in topological k -graphs. We will also see examples of topological k -graphs in which one condition may be substantially easier to verify than the other conditions. (Received September 22, 2011)