Cynthia Farthing and Nura Patani*, nura.patani@asu.edu, and Paulette N. Willis.

Topological k-graphs constructed from a topological dynamical systems and the associated $C^*$-algebras.

Generalizing the construction of a topological graph from a singly generated dynamical system (SGDS), one may construct a topological k-graph from a locally compact Hausdorff space and a family of local homeomorphisms which pairwise commute where the composition is defined. In joint work with Cindy Farthing and Paulette Willis, we consider the case where these maps are everywhere-defined and show that the $C^*$-algebra of a topological k-graph constructed from such a system has a crossed product structure in the sense of Larsen. Time permitting, we describe work in progress on developing a characterization of the topological k-graphs which arise from such a dynamical system. (Received September 20, 2011)