1023-54-568 **Adrian A Wilson*** (`aawilson@olemiss.edu`), Post Office Box 4389, University, MS 38677.
Graph Groupoids and their topology.

This talk investigates graph groupoids and the path spaces associated with their unit spaces. It was shown that for a general directed graph $\mathcal{E}$, the path space $X = Y \cup Z$, where Y is the set of finite paths and Z the set of infinite paths in $\mathcal{E}$, is a locally compact metric space. Three main questions are solved. For the first, a question that was asked by A. Kumjian in the case of the Cuntz graph $\mathcal{E}^\infty$, was how the topological space X relates to an earlier topological space investigated by J. Renault (Orléans). I show that the two topological spaces are homeomorphic and so can be identified. The talk then discusses the graph groupoid for $\mathcal{E}$ in the general case. For this investigation, it is important to be able to use the axiomatic approach to groupoids, and I show that this is equivalent to the usual definition of a groupoid as a "small category with inverses". This proof of this equivalence answers the second main question. The third is to construct the graph groupoid $G_\mathcal{E}$ for $\mathcal{E}$ and prove that it is a second countable, locally compact, Hausdorff groupoid. (Received September 18, 2006)