

1125-VF-1842 **Dimitri Plessas*** (plessas@nsuok.edu) and **Tien Chih** (tien.chih@newberry.edu). *A Categorical Reformulation of the Reconstruction Conjectures.*

In the standard category of (undirected) graphs, the graphs are restricted to not have multiple edges and are allowed at most one loop at any vertex. By instead considering the category of all graphs, which allows for multiple edges and loops, we establish a categorical version of the First Noether Isomorphism Theorem. This categorical version uses kernel and cokernel pairs and fails to hold in the standard category of graphs. A direct consequence of this result is a reformulation of the vertex and edge reconstruction conjectures in terms of graph homomorphisms. We show that reconstructability in both conjectures is equivalent to the existence of a graph homomorphism satisfying a single equation. (Received September 19, 2016)