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Dimitri Plessas* (plessas@nsuok.edu), Dept. of Mathematics and Computer Science, Northeastern State University, 611 N. Grand Ave., Tahlequah, OK 74464, and **Tien Chih** (tien.chih@newberry.edu), Newberry College, 2100 College St., Newberry, SC 29108. *Graphs Are Uniquely Determined by Their Inverse Semigroup.*

Automorphism groups are one of the primary algebraic tools of Graph Theory. However, automorphism groups are too coarse an algebraic tool to distinguish graphs, and many non-isomorphic graphs will have isomorphic automorphism groups. One may view the study of the fixing number and the distinguishing number as a way to refine this coarse nature of the automorphism group via group actions.

Algebraically formalizing Lovász's use of local symmetry to solve the edge reconstruction conjecture for graphs with n vertices and m edges where $m \geq 1/2\binom{n}{2}$, we define the full inverse semigroup of a graph to be the inverse semigroup of all partial isomorphisms between subgraphs of the graph. We show the full inverse semigroup determines the graph in the sense that two graphs are isomorphic if and only if their associated inverse semigroups are isomorphic. (Received September 21, 2015)