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Alexander Wires*, Department of Mathematics, 1326 Stevenson Center, Vanderbilt University, Nashville, TN 37240. *Definability in the substructure ordering of simple graphs*. Preliminary report.

We explore first-order definability in the poset \mathcal{G} of isomorphism types of finite simple graphs (irreflexive, symmetric) ordered by embeddability. We prove edge-complementation induces the only non-identity automorphism of \mathcal{G} , and that the isomorphism type of each finite simple graph is definable up to this automorphism. Following Jezek and McKenzie (Definability in Substructure Orderings I - IV), we can extend these results to definability in the lattice of universal classes of simple graphs. We then consider the connection between the isomorphism-invariant relations of finite simple graphs definable in the full second-order language, and the first-order definable relations in \mathcal{G} . (Received November 22, 2011)