

1067-05-2154      **Derksen Harm\***, 530 Church Street, Ann Arbor, MI 49109-1043. *Complexity of the Graph Isomorphism Problem*. Preliminary report.

It is unknown whether the Graph Isomorphism Problem lies in the polynomial time complexity class. We will present an algorithm which can distinguish many classes of graphs in polynomial time, including the Cai-Fürer-Immerman examples. The CFI examples cannot be distinguished by the classical higher dimensional Weisfeiler-Lehman method. Our approach uses truncated Gröbner bases to construct certain approximate categories. (Received September 22, 2010)