1035-05-911   **Howard Skogman*** (`hskogman@brockport.edu`), 350 New Campus Dr. Dept. of Math, SUNY Brockport, Brockport, NY 14607, and **Marvin Minei**. *Covering graphs and block diagonalization techniques.*

Given a Galois cover of a graph, the Galois group can be used to block diagonalize the adjacency matrix for the cover. This technique is then used in two ways: (1) given a covering graph Y of X, one can determine the Galois group of the cover and then the spectrum of the adjacency matrix of the cover, (2) given a graph X, and a Galois group G, construct a covering graph with Galois group G and then analyze the spectrum of the adjacency matrix. In particular some new Ramanujan graphs are found and others conjectured. (Received September 17, 2007)