1023-15-1710   **Jason Grout*** (`grout@math.byu.edu`), 292 TMCB, Provo, UT 84602, **Wayne Barrett**, 292 TMCB, Provo, UT 84602, and **Raphael Loewy**. *The Minimum Rank Problem Over F_2*. Preliminary report.

We consider all symmetric $n \times n$ matrices with a fixed off-diagonal zero/nonzero pattern Z. The minimum rank for the pattern Z is the minimum rank of all such matrices. It is known that, for each rank k between the minimum rank of Z and n, there are symmetric matrices having the zero/nonzero pattern Z and rank k. Determining the minimum rank of a pattern is the important, but difficult question. Working with matrices over a finite field simplifies and gives insight into the problem over an infinite field. Each zero/nonzero pattern corresponds to an undirected graph in a natural way, thus defining the minimal rank of a graph. I will give a progress report on our recent results in classifying and recognizing the graphs having minimum rank less than or equal to 3 in F_2, the finite field of order 2. I will also describe how some of our results extend to determining the minimum rank of patterns of matrices over infinite fields. (Received September 26, 2006)