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Stephen G Hartke and **Derrick Stolee*** (s-dstolee1@math.unl.edu), P.O. Box 880130, Lincoln, NE 68588-0130, and **Douglas B West** and **Matthew Yancey**. *On extremal graphs with a given number of perfect matchings*. Preliminary report.

We consider the problem of maximizing the number of edges in a graph G on n vertices under the restriction that the number of perfect matchings in G is a given constant p . Dudek and Schmitt showed that this number approaches $\frac{n^2}{4} + c_p$ as n grows, where c_p is a constant depending only on p . This work extends the understanding of the sequence c_p , including some constructive lower bounds and a conjecture on its exact value. Moreover, we present some structural results on graphs which achieve the extremal number of edges. (Received September 16, 2010)