1056-57-1827 **Moshe Cohen**, **Oliver Dasbach** and **Heather M. Russell*** (`hrussell@math.lsu.edu`). *A dimer model for the twisted Alexander polynomial.*

The dimer model is the study of the set of all perfect matchings of a graph. By examining a certain bipartite graph associated to a knot, the dimer model provides a method for calculating the Alexander polynomial. In this work we generalize this idea to give a new combinatorial way to calculate the twisted Alexander polynomial. We discuss properties and applications of this approach. (Received September 22, 2009)