1002-05-14   **Ronald C. Read*** (`rcread@math.Uwaterloo.ca`), Department of Combinatorics and Optimization, University of Waterloo, Waterloo, Ontario Canada. *A brute-force method for studying chromatic equivalence of homeomorphic graphs.*

Let M be a multigraph, and let H(M) denote the homeomorphism class of M, that is, the set of all graphs obtained from M by replacing every edge by a 'chain' of edges in series.. Given M it is possible, either using the 'chain polynomial' introduced by E. G. Whitehead and myself (Discrete Math. 204 (1999) 337-356) or by ad hoc methods, to obtain an expression which subsumes the chromatic polynomials of all the graphs in H(M) . It is a function of the number of colors and the lengths of the chains replacing the edges of M . This function contains complete information about the chromatic properties of the graphs in H(M) . In particular it holds the answer to the question: Which pairs of graphs in H(M) are chromatically equivalent? However, extracting this information is not an easy task. In this talk I shall present a method for answering this question. At first sight it appears to be wildly impractical, but I shall show that it can be persuaded to yield results for some small graphs M . Some results will be given. The analogous problem for the Tutte polynomial will also be discussed. (Received May 31, 2004)