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Adam Giambrone* (adam.giambrone@uconn.edu). *Sigma-Adequate Link Diagrams and the Tutte Polynomial*. Preliminary report.

A well-known bijection between checkerboard-colored link diagrams D and edge-signed planar graphs G (called *Tait graphs*) has led to a number of connections between the fields of knot theory and graph theory. As an example, Thistlethwaite used this bijection to characterize A-adequate link diagrams D both in terms of the edge-restricted and edge-contracted Tait graphs $G|E_+$ and G/E_+ , respectively, and in terms of the nonvanishing behavior of a product $\chi_{G|E_+}(0, t) \cdot \chi_{G/E_+}(t, 0)$ of two Tutte polynomials. In this talk, we extend Thistlethwaite's results to the wider class of sigma-adequate link diagrams. Furthermore, we show that the Tutte polynomial $\chi_G(t, t)$ of the Tait graph G can be written as a sum of products of two Tutte polynomials, where the sum is over the sigma-adequate states of D . Using this state sum, we show that the number of sigma-adequate states of D is bounded above by the number of spanning trees in G and we give a method to find all of the sigma-adequate states of D . (Received September 14, 2016)