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**Austin J. Mack\*** (austinjmack@gmail.com). *The Meaning Behind the Coefficients of the  $sl_2$  Weight System of Chord Diagrams.*

After Vassiliev introduced a natural filtration in the space of finite order knot invariants, others suggested a construction of a weight system from a Lie algebra. This work by many, lead to the development of the  $sl_2$  weight system, which takes a chord diagram to a polynomial. It has been seen with a normalization of the chromatic polynomial of a graph we achieve non-negative coefficients with a simple combinatorial meaning. The coefficients represent the number of ways to split the set of vertices of the graph into a number of independent sets. Here we will be investigating a similar relationship between the chord diagrams of knots and the  $sl_2$  weight system. We search to find these coefficients and the combinatorial meaning behind them, relating to their corresponding chord diagram. (Received September 16, 2013)