1154-05-1060 **Melissa Gutierréz González*** (mgutierrezgo@oxy.edu), 1600 Campus Road #948, Los Angeles, CA 90041, and **Jerrell Cockerham**, **Amaury Minino** and **Pamela E Harris (Mentor)**. *Weight q-Multiplicities for Representations of the Exceptional Lie Algebra* $\mathfrak{g}_2$. Preliminary report.

In combinatorial representation theory, Kostant's partition function counts the number of ways a given weight (vector) of a Lie algebra $\mathfrak{g}$ can be written as a nonnegative integral linear combination of the positive roots of $\mathfrak{g}$. Although it is very difficult to give a general closed formula for this vector partition function for Lie algebras of arbitrary rank, we are motivated by previous successes in low rank cases and present a closed formula of Kostant's partition function for the exceptional Lie algebra $\mathfrak{g}_2$. We then use this result to present a new closed formula for the $q$-multiplicity formula in this Lie algebra. (Received September 12, 2019)