1116-05-705 **Timothee William Bryan*** (twbryan@ncsu.edu) and **Naihuan Jing** (jing@ncsu.edu). *An Algebraic Formula for the Kostka-Foulkes Polynomials.* Preliminary report.

The familiar Hall-Littlewood polynomials, $H_\mu[X;t]$ form a basis for symmetric functions and are related to the Schur function, $s_\mu[X]$, basis via

$$H_\mu[X;t] = \sum_{\lambda \vdash |\mu|} K_{\lambda\mu}(t) s_\lambda[X]$$

where $K_{\lambda\mu}$ is the Kostka-Foulkes Polynomial. Lascoux and Schützenberger proved that for semi-standard Young tableaux

$$H_\mu[X;t] = \sum_{T \in SST^\mu} t^{charge(T)} s_{shape(T)}[X]$$

where the charge of a tableau T is a value obtained by weighting the entries of a reading word corresponding to a filling using content μ in a particular fashion. We define an algebraic formula for the Kostka-Foulkes polynomials using Hall-Littlewood vertex operators and Jing's Hall-Littlewood inner product which does not utilize Lascoux and Schüteznberger's result. We will also discuss combinatorial symmetries which arise during the calculations and proof of our result. (Received September 10, 2015)