1083-05-44 **Jeremy L Martin*** (jmartin@math.ku.edu) and **Jennifer D Wagner** (jennifer.wagner1@washburn.edu). *On the Spectra of Simplicial Rook Graphs.*

The *simplicial rook graph* $SR(d, n)$ is the graph whose vertices are the lattice points in the $n$th dilate of the standard simplex in $\mathbb{R}^d$, with two vertices adjacent if they differ in exactly two coordinates. We prove that $SR(3, n)$ has integral spectrum for every $n$, by calculating an explicit eigenbasis. In addition, we present evidence in support of the conjecture that $SR(d, n)$ is integral for all $d$ and $n$. (Received August 07, 2012)