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Gexin Yu and **C. Santana Afton*** (csafton@email.wm.edu), CSU 0433, 110 Sadler Center, Williamsburg, VA 23185. *Routing Permutations on Hypercube Graphs*. Preliminary report.

Let G be a graph, and let p_v be a pebble placed upon the vertex v . We define π as a permutation on the vertices of G , where we denote $p_{\pi(v)}$ to be the destination for p_v . Our goal is to move each pebble to its destination. For each step, we select a disjoint set of edges and swap the pebbles that lie on each edge. The minimum number of steps to achieve π is denoted $rt(G, \pi)$, the routing number for π . The maximum routing number for any π is denoted as $rt(G)$. We will focus primarily on $rt(Q_n)$, where Q_n is the n -dimensional hypercube.

Recently, Li, Lu, and Yang showed that $n+1 \leq rt(Q_n) \leq 2n-2$, proving the conjecture of the lower bound proposed by Alon, Chung, and Graham. They also determined $rt(Q_3)$ computationally. In this talk we will demonstrate an alternative proof to the lower bound, and an algorithm to find $rt(Q_3)$ with negligible computation. (Received September 20, 2016)