1145-05-474 **Lindsey-Kay Lauderdale*** (llauderdale@towson.edu), **Christina Graves** and **Stephen Graves**. *Edge-minimal Graphs with Given Generalized Quaternion Automorphism Group.* Preliminary report.

For a finite group G, let $e(G, m)$ denote the minimum number of edges among all graphs with m vertices and automorphism group isomorphic to G; if no such graphs exists, then consider $e(G, m)$ to be undefined. This invariant is the subject of prior research by several authors, but its value is known only for two finite groups and a few other infinite families of finite groups. In this talk, we will consider the value of $e(Q_{2^n}, m)$ for the generalized quaternion group, Q_{2^n}, where $n \geq 3$. Specifically, if $m \geq 2^{n+1}$, we determine the value of $e(Q_{2^n}, m)$; the value of $e(Q_{2^n}, m)$ is undefined provided $m < 2^{n+1}$. Additionally, we will discuss the sizes of connected edge-minimal graphs with quaternion symmetry and conclude with some open questions on the value of $e(G, m)$ in general. (Received September 07, 2018)