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**Catherine Bray Sass\*** (cbray2@kent.edu). *Character Degree Graphs of Finite Solvable Groups with Diameter Three.*

Let  $G$  be a finite solvable group and  $\Delta(G)$  be the character degree graph, a simple undirected graph. The vertices,  $\rho(G)$ , are the set of primes that divide the character degrees and two primes are adjacent if their product divides a character degree. There are many restrictions on this graph. In particular, Pálffy's Condition tells us that in any subset of  $\rho(G)$  that has size three, two of the primes must be adjacent. It follows immediately that if  $\Delta(G)$  is connected, the diameter is at most three. We will present the history of these graphs that have diameter three, we will restrict the set of possible graphs, and we will classify the groups that will attain a character degree graph that has diameter three. (Received August 31, 2015)