1043-20-173 **Anders O.F. Hendrickson*** (ahendric@cord.edu), Concordia College, 901 8th Street South, Moorhead, MN 56562. *Supercharacter theories of finite cyclic groups.*

If $\mathcal{K}$ is a partition of a finite group G, there sometimes exists a compatible partition $\mathcal{X}$ of the irreducible characters of G, along with a character χ_X for every $X \in \mathcal{X}$ with the elements of X as its irreducible constituents, so that each χ_X is constant on each $K \in \mathcal{K}$ and $|\mathcal{X}| = |\mathcal{K}|$. If $\{1\} \in \mathcal{K}$, then P. Diaconis and M. Isaacs have called such an ordered pair $(\mathcal{X}, \mathcal{K})$ a *supercharacter theory* of G.

Magma's ability to compute within group algebras helped us discover not only new families of supercharacter theories but also an associative product of supercharacter theories, and we classify all supercharacter theories (up to scaling) of certain finite cyclic groups, including the cyclic groups of orders pq and pqr. (Received August 26, 2008)