1086-00-1008 **Holly E Attenborough*** (heattenb@indiana.edu), Bloomington, IN 47401. *A Decomposition for Idempotents of the Brauer Monoid.*

Let $G = Gal(K/F)$ for a Galois field extension K/F. The Brauer Monoid, $M^2(G,K)$ is defined by adapting the cocycle construction of the Relative Brauer Group, $Br(K/F) = H^2(G,K^*)$. We adapt the cocyles by allowing the image to be all of K, these cocycles, $f : G \times G \to K$, are called **weak** 2-cocycles. Let e an idempotent weak 2-cocycle, define the group $M_e^2(G,K)$ to be $\{[f] \in M^2(G,K) | ef = f\}$. For a specfic ring R_e associated with an idempotent e, we have a complex on R_e-modules, M^e, that gives us that $M_e^2(G,K) \cong H^2(Hom_{R_e}(M^e, K^*))$. The idempotents e are in one-to-one correspondence with lower subtractive partial orders on the group G, $e \mapsto \leq_e$. For S and T lower subtractive subsets of G, such that $S \cup T = (G, \leq_e)$, there exists a split short exact sequence on the complexes:

$$0 \to \mathbf{M}^{S \cap T} \to \mathbf{M}^S \oplus \mathbf{M}^T \to \mathbf{M}^e \to 0.$$

This gives us a long exact sequence on cohomology, which can aid with the computation of $H^2(Hom_{R_e}(M^e, K^*)) \cong M_e^2(G,K)$. (Received September 17, 2012)