1052-55-181   **Staic D Mihai*** (`mstaic@indiana.edu`), Bloomington, IN 47405. *Secondary Cohomology and k-invariants.*

For a triple (G, A, κ) (where G is a group, A is a G-module and $\kappa \in H^3(G, A)$), and a G-module B we introduce a new cohomology theory ${}_2H^n(G, A, \kappa; B)$ which we call the secondary cohomology. We give a construction that associates to a pointed topological space (X, x_0) an invariant ${}_2\kappa^4 \in {}_2H^4(\pi_1(X), \pi_2(X), \kappa^3; \pi_3(X))$. This construction can be seen a "3-type" generalization of the classical k-invariant. (Received August 27, 2009)