1021-37-34   **John W Robertson*** (`robertson@math.wichita.edu`), Department of Mathematics, Wichita State University, Wichita, KS 67260. *Invariant currents for dynamical systems via actions on sheaf cohomology.*

Let $f\colon X \to X$ be a smooth self map of a compact manifold. One can consider the successive applications of f as giving a dynamical system on X. Generally it is very useful to understand invariant objects of a given type on X.

Motivated by results in holomorphic dynamics we seek to construct invariant closed currents. We use sheaf cohomology to construct a closed invariant degree one current corresponding to each expanding invariant degree one cohomological class of $f^*\colon H^1(X,\mathbb{R}) \to H^1(X,\mathbb{R})$. We show that the successive preimages of sufficiently regular degree one currents must converge to one of these invariant currents whenever there is no cohomological obstruction to this happening. For invariant higher degree cohomological classes we can make similar conclusions as long as most of the expansion takes place "along" cohomological classes. An observation allows us to also make regularization and positivity conclusions for these invariant closed currents in a variety of circumstances. (Received July 12, 2006)