Abstract: Algebraic K-Theory is often thought of as the universal additive invariant of rings (or more generally, exact categories). Often, however, functors on exact categories don’t satisfy additivity. We will describe a procedure due to McCarthy that constructs a functors universal additive approximation, and apply it to different local coefficient systems, recovering known invariants of rings (K-Theory, THH, etc.). We will talk about what happens when we push these constructions to the world of spectra, and tie in work of Lindenstrauss and McCarthy on the Taylor tower of Algebraic K-Theory.