Hochschild homology of a ring has a topological analogue for ring spectra, topological Hochschild homology (THH), which plays an essential role in the trace method approach to algebraic K-theory. For a $C_n$-equivariant ring spectrum, one can define $C_n$-relative THH. This leads to the question: What is the algebraic analogue of $C_n$-relative THH? In this talk, I will define twisted Hochschild homology for Green functors, which allows us to describe this algebraic analogue. This also leads to a theory of Witt vectors for Green functors, as well as an algebraic analogue of TR-theory. (Received August 06, 2018)