1116-13-1838 **Rebecca R.G.*** (`rirg@umich.edu`). *Closure operations that induce big Cohen-Macaulay modules and algebras, module closures, and classification of singularities.* Preliminary report.

Geoffrey Dietz introduced a set of axioms for a closure operation on a complete local domain R such that the existence of a closure operation satisfying these axioms is equivalent to the existence of a big Cohen-Macaulay module. These are called Dietz closures. In characteristic $p > 0$, solid closure, tight closure, and plus closure all satisfy the axioms. I will give an additional axiom for a closure operation such that the existence of a Dietz closure satisfying this axiom is equivalent to the existence of a big Cohen-Macaulay algebra.

I will also discuss module closures, including those coming from modules of syzygies and from canonical modules. As an application, I will show that under mild conditions, a ring R is regular if and only if all Dietz closures on R are trivial. The proof of this statement leads to results relating Dietz closures to familiar closures such as integral closure and regular closure. (Received September 21, 2015)