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Rebecca R.G.* (rirg@umich.edu). *Closure operations that induce big Cohen-Macaulay modules and algebras*. Preliminary report.

Geoffrey Dietz introduced a set of axioms for a closure operation on a complete local domain so that if such a closure operation exists, the ring has a big Cohen-Macaulay module. These are called Dietz closures. In characteristic $p > 0$, solid closure, tight closure, and plus closure are all Dietz closures.

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 more familiar closures such as integral closure and regular closure. I will also discuss a new axiom for a closure operation such that the existence of a Dietz closure satisfying this additional axiom is equivalent to the existence of a big Cohen-Macaulay algebra. (Received July 30, 2015)