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Invariants of closure operators in Stanley-Reisner rings.

Let $R = k[x_1, \ldots, x_n]/I_\Delta$ where I_Δ is an ideal of $k[x_1, \ldots, x_n]$ generated by square free monomials and k is an infinite field of characteristic $p \geq 0$. If I is an ideal of R with $I^* = J$, the tight closure of I, I is called a $*$-reduction of J. Further, the intersection of all minimally generated $*$-reductions of J is called the $*$-core of J. Let $J = (x_1, \ldots, x_n)$. Then we examine all $*$-reductions of J and bounds and special cases of $*$-core of J. We expand this work to the integral closure operator and the analogous integral closure ideas of reductions and core of J. (Received September 24, 2018)