1126-13-212 **Giulio Peruginelli** and **Nicholas J Werner*** (`wernern@oldwestbury.edu`), Department of Mathematics, SUNY College at Old Westbury, Old Westbury, NY 11568. *RD-pure Elements of an Algebra.* Preliminary report.

Given a commutative ring R and two R-modules $N \subseteq M$, we say that N is *relatively divisible pure (RD-pure)* in M (or that N is an *RD-pure* submodule of M) if for every $r \in R$, $rM \cap N = rN$; i.e., every element $n \in N$ that is divisible by some $r \in R$ in M is already divisible by r in N. Let D be an integrally closed domain and A a torsion-free D algebra. We say that $a \in A$ is *RD-pure* if for all $d \in D$ we have $dA \cap D[a] = dD[a]$; that is, if $D[a]$ is an RD-pure D-submodule of A.

Our motivation for this topic comes from working with companion matrices and attempting to isolate properties of them that may be useful in other algebras. RD-purity is one such property, because any companion matrix in the matrix algebra $M_n(D)$ is RD-pure (although they are not the only RD-pure elements of $M_n(D)$) and RD-purity has a surprising number of equivalent definitions in a general D-algebra A. In addition to the definitions given above, RD-pure elements of A can be characterized in terms of their minimal polynomials over D, their null ideals over residue rings of D, or polynomials integer-valued at elements of A. In this preliminary report, we will discuss these definitions and related musings. (Received January 13, 2017)