Adela Vraciu* (vraciu@math.sc.edu). When are generic forms exact zero divisors? Preliminary report.

Let \((R, m)\) be an Artinian ring. A pair of elements \((x, y)\) is a pair of exact zero divisors if \(\text{ann}(x) = (y)\) and \(\text{ann}(y) = (x)\).

Conca showed that a standard graded ring with \(m^3 = 0\) defined by generic quadratic equations has a Conca generator, i.e. an element \(x \in m\) such that \(x^2 = 0\) and \(m^2 = xm\). If moreover \(\text{rank}(m/m^2) = \text{rank}(m^2)\), then a Conca generator is an exact zero divisor. In fact, a generic linear form in a ring as described above is an exact zero divisor. More generally, if a standard graded ring with \(m^3 = 0\) admits exact zero divisors, then a generic linear form in that ring is an exact zero divisor.

We investigate a converse of this statement. More precisely, if \((R, m)\) is a standard graded ring and \(d \geq 1\) is an integer such that a generic form of degree \(d\) is an exact zero divisor, then we prove that \(m^3 = 0\). (Received January 10, 2017)