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Jason McCullough* (jmccullough@msri.org). *Syzygy Bounds on the Regularity of Ideals.*

Let R be a standard graded polynomial ring over a field K and let I be a homogeneous ideal of R . We investigate what can be said about $\text{reg}(R/I)$ in terms of some of the maximal degree syzygies. We write $t_i = \text{regTor}_i(R/I, K)$. Examples of Mayr and Meyer show that t_2 can be double exponential in terms of t_1 . We show that $\text{reg}(R/I)$ is bounded by a polynomial in $t_1 \dots t_h$, where h is at least $1/2 \dim R$. We also discuss similar results and the possibility of stronger bounds. (Received September 03, 2012)