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Milena Hering* (mhering@umich.edu), 525 East University Avenue, Ann Arbor, MI 48109, and
Hal Schenck and **Greg Smith**. *Syzygies, multigraded regularity and toric varieties*.

We study the equations defining a projective variety and the higher syzygies between them using multigraded regularity as introduced by Maclagan and Smith. As an application, we obtain a sufficient condition for the power of an ample line bundle on a toric variety guaranteeing that the corresponding embedded variety is projectively normal and generated by quadratic equations, and that the first p syzygies are linear. This technique also yields new results for the syzygies of Veronese-Segre embeddings. This is joint work with H. Schenck and G. Smith. (Received February 19, 2005)