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Kurt Herzinger* (kurt.herzinger@usafa.edu), 2354 Fairchild Dr., Suite 6D124, USAF Academy, CO 80840-6252. *Using numerical semigroups to investigate torsion in tensor products.*

Let $R = k[[t^{n_1}, \dots, t^{n_e}]]$ where k is a field and n_i is a positive integer for $1 \leq i \leq e$. The valuation of R is the numerical semigroup $S = \langle n_1, \dots, n_e \rangle$. Many properties of R are reflected in S making numerical semigroups a useful tool for studying certain questions concerning one dimensional local Noetherian domains. In this talk we will see how numerical semigroups can be used to investigate torsion in the tensor product of a fractional ideal I , generated by monomials, over R with its inverse. The technique involves looking at the inequality $\mu_R(I)\mu_R(I^{-1}) \geq \mu_R(II^{-1})$ in the corresponding relative ideal and its dual over S . (Received August 17, 2012)