999-13-208 **Adam Van Tuyl*** (`avantuyl@sleet.lakeheadu.ca`), Department of Mathematical Sciences, Lakehead University, Thunder Bay, Ontario P7B 5E1, Canada, and **Jessica Sidman**. *Multigraded regularity and fat points.*

The Castelnuovo-Mumford regularity of an ideal I is an important invariant in commutative algebra. The regularity of I, denoted $\mathrm{reg}(I)$, is of particular interest when I is the defining ideal of a set of fat points Z in $\mathbb{P}^n$. In this case $\mathrm{reg}(I)$ gives some partial information about the Hilbert function of Z. Recently, several authors have proposed extensions of the notion of regularity to a multigraded context. In this talk I will describe what these notions can tell us about sets of fat points in the multiprojective space $\mathbb{P}^{n_1} \times \cdots \times \mathbb{P}^{n_k}$. This is joint work with J. Sidman. (Received August 23, 2004)