1077-22-1974 **Vitaly Bergelson**, **Neil Hindman** and **Kendall Williams*** (kendall.williams@usma.edu).

Elements of Tensor Products of Ultrafilters on $\mathbb{N}$*.* Preliminary report.

Let $a_1, a_2, \ldots, a_m \in \mathbb{Z}$, $a_m > 0$, and $\langle x_n \rangle_{n=1}^{\infty}$ in $\mathbb{N}$. A Milliken-Taylor system, $MT(\langle a_i \rangle_{i=1}^{m}, \langle x_n \rangle_{n=1}^{\infty})$, is $\{\sum_{i=1}^{m} a_i \sum_{t \in F_i} x_t : F_1, F_2, \ldots, F_m$ are increasing finite nonempty subsets of $\mathbb{N}\}$. Given $\langle x_n \rangle_{n=1}^{\infty}$ in $\mathbb{N}$ and $A \subseteq \mathbb{N}$, there is a sum subsystem $\langle y_n \rangle_{n=1}^{\infty}$ of $\langle x_n \rangle_{n=1}^{\infty}$ such that the finite sums of $\langle x_n \rangle_{n=1}^{\infty}$ are contained in A if and only if there is an idempotent p in the Stone-Čech Compactification of $\mathbb{N}$ such that $A \in p$ and for each $m \in \mathbb{N}$, the finite sums of $\langle x_n \rangle_{n=1}^{\infty}$ are in p. A similar result holds where the finite sums are replaced by the Milliken-Taylor system and A is an element of a sum of ultrafilters. Further generalizations of this result hold wherein the Milliken-Taylor system is replaced by a more general analogous set and A is an element of an arbitrary polynomial evaluated on ultrafilters or it is an element of a tensor product of ultrafilters. (Received September 21, 2011)