1020-37-184 **Michael C R Johnson*** (johnson@math.northwestern.edu), Department of Mathematics, 2033 Sheridan Rd, Evanston, IL 60208. *Convergence of Polynomial Ergodic Averages of Several Variables for Some Commuting Transformations.*

Let $(X, \mathcal{B}, \mu)$ be a probability space and let $T_1, \ldots, T_l$ be $l$ commuting invertible measure preserving transformations of X. We show that given a finite set of ergodicity conditions on the group of transformations generated by $T_1, \ldots, T_l$, the averages $\frac{1}{|\Phi_N|} \sum_{u \in \Phi_N} \prod_{i=1}^{r} T_1^{p_{i1}(u)} \ldots T_l^{p_{il}(u)} f_i$ converge in $L^2(\mu)$ for all polynomials $p_{ij}: \mathbb{Z}^d \to \mathbb{Z}$, all $f \in L^\infty(\mu)$ and all Følner sequences $\{\Phi_N\}_{N=1}^{\infty}$ in $\mathbb{Z}^d$. (Received August 28, 2006)