1030-05-394 **Jeong Ok Choi*** (jchoi@math.uiuc.edu), 250 Altgeld Hall 1409 W.Green, Urbana, IL 61801, and **Douglas B. West**. *The linear discrepancy of product of chains.*

The linear discrepancy $ld(P)$ of a poset $P = (X, \prec)$ is the least integer m for which there exists an injective function $f : X \longrightarrow \{1, 2, \ldots, |X|\}$ such that $f(x) < f(y)$ whenever $x \prec y$ and $|f(x) - f(y)| \leq m$ if $x \| y$. The exact value of the linear discrepancy of a product of two chains is known; In 2003 Hong, Hyun and Kim proved that $ld(\underline{n} \times \underline{m}) = \lceil \frac{mn}{2} \rceil - 2$. In this talk we present an asymptotic bound for the linear discrepancy of products of three chains with equal length and the linear discrepancy of products of four chains with equal length. In fact $ld(\underline{k} \times \underline{k} \times \underline{k}) = k^3(\frac{3}{4} + o(1))$ and $ld(\underline{k} \times \underline{k} \times \underline{k} \times \underline{k}) = k^4(\frac{7}{8} + o(1))$, where $\underline{k}$ is a chain of length $k - 1$.

This is joint work with Douglas B. West. (Received August 07, 2007)