1063-42-185 **Geoff Diestel*** (geoff_diestel@hotmail.com), 10405 NE 9th Ave, #D14, Vancouver, WA 98685. *A vector-valued embedding for Lebesgue spaces.* Preliminary report.

The space $\ell_\infty(L_{p,\infty}) \cap \ell_p(L_\infty)$ embeds into $L_{p,\infty}(\ell_\infty)$ for all $0 < p \leq \infty$. Combining this result with factorization theory allows one to obtain many square and maximal function estimates related to families of k-linear operators. With these results, many estimates can be obtained for a large class of vector-valued operators of the form $\vec{T} = (T_j)_j$. These estimates are particularly useful in conjunction with Littlewood-Paley theory to solve many new and old problems involving linear and multilinear Fourier multiplier operators. Applications for dyadic maximal operators and bilinear Calderón-Zygmund operators with rough kernels are included. Moreover, the above embedding leads to an extremely short and simple proof of the L_2 bounds for the Littlewood-Paley paraproduct P_b where $b \in BMO$. (Received August 16, 2010)