1067-43-2240 **Nicholas Boros*** (borosnic@msu.edu), 354 Lamb Street, Perry, MI 48872. *Sharp L^p-bounds for a perturbation of Burkholder's Martingale Transform.*

In this talk we discuss how to find the Bellman function associated with proving the following estimate. For $1 < p < \infty, \tau \in [-\frac{1}{2}, \frac{1}{2}], \varepsilon_k \in \{\pm 1\}, n \in \mathbb{Z}_+, \{d_k\}_k$ a martingale difference sequence and $\begin{pmatrix} \varepsilon_k \\ \tau \end{pmatrix}$ a vector in $\mathbb{R}^2$, we obtain

$$\left\| \sum_{k=1}^{n} \begin{pmatrix} \varepsilon_k \\ \tau \end{pmatrix} d_k \right\|_{L^p([0,1),\mathbb{C}^2)} \leq C_{p,\tau} \left\| \sum_{k=1}^{n} d_k \right\|_{L^p([0,1),\mathbb{C})},$$

with $C_{p,\tau}$ as the sharp constant. This is a generalization of Burkholder's famous result, which holds when $\tau = 0$ with $C_{p,\tau} = \max\{p-1, \frac{1}{p-1}\}$, that can similarly be used to obtain sharp estimates of singular integrals. We discuss an application to a singular integral which has an operator norm of $C_{p,\tau}$. This is a joint work with P. Janakiraman and A. Volberg. (Received September 22, 2010)