1046-46-835 **Anna Kamińska** and **Anca M. Parrish*** (abuican1@memphis.edu), 1055 Goodman St, Memphis, TN 38111. *Smooth and extreme points in Marcinkiewicz function spaces.*

The Marcinkiewicz function spaces M_W generated by a decreasing weight $w : \mathbb{R}_+ \to \mathbb{R}_+$ are the spaces of measurable functions f satisfying $\|f\|_W = \sup_{t>0} \frac{\int_0^t f^*}{W(t)} < \infty$, where f^* is the decreasing rearrangement of f and $W(t) = \int_0^t w$. We also define $M_W^0 = \left\{ f \in M_W : \lim_{t\to 0^+,\infty} \frac{\int_0^t f^*}{W(t)} = 0 \right\}$. M_W^0 is the subspace of all order continuous elements of M_W. The dual of M_W^0 is the Lorentz space $\Lambda_{1,w}$ with the norm $\|f\|_{1,w} = \int_0^\infty f^* w$.
Theorem: Let $f \in S_{M_W}$ (or $f \in S_{M_W^0}$). Then f is a smooth point in M_W (or M_W^0) if and only if there exists a unique $0 < a < \infty$ such that

$$1 = \|f\|_W = \frac{\int_0^a f^*}{W(a)}.$$

Theorem: A function $f \in S_{M_W}$ is an extreme point if and only if $f^* = w$. M_W^0 does not have any extreme points. (Received September 11, 2008)