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**Anna Kamińska** and **Anca M. Parrish\*** ([abuican1@memphis.edu](mailto: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  $w : \mathbb{R}_+ \rightarrow \mathbb{R}_+$  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  $M_W^0 = \left\{ f \in M_W : \lim_{t \rightarrow 0^+, \infty} \frac{\int_0^t f^*}{W(t)} = 0 \right\}$ .  $M_W^0$  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)