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**Fiona Murnaghan\*** ([fiona@math.toronto.edu](mailto:fiona@math.toronto.edu)), Department of Mathematics, University of Toronto, 40 Saint George Street, Toronto, Ontario M4S 2E4, Canada. *Distinguished representations of reductive  $p$ -adic groups*. Preliminary report.

Let  $G$  be a connected reductive  $p$ -adic group, and let  $\theta$  be an involution of  $G$ . Let  $H$  be the group of fixed points of  $\theta$  in  $G$ . A smooth representation  $\pi$  of  $G$  is said to be  $H$ -distinguished (or  $\theta$ -distinguished) if there exists an  $H$ -invariant linear functional on the space  $V$  of  $\pi$ . If  $\lambda$  is an  $H$ -invariant element of  $V^*$  and  $v$  belongs to  $V$ , the function  $g \mapsto \langle \lambda, \pi(g)v \rangle$  is called a generalized matrix coefficient of  $\pi$  relative to  $H$ . If  $\pi$  is  $H$ -distinguished,  $\pi$  is said to be  $H$ -relatively supercuspidal if all of the generalized matrix coefficients of  $\pi$  (relative to  $H$ ) are compactly supported modulo  $HZ$ , where  $Z$  is the centre of  $G$ . We will discuss some results and some open questions concerning relatively supercuspidal representations of reductive  $p$ -adic groups. (Received September 08, 2009)