1024-11-200 **David B. Leep*** (leep@ms.uky.edu), Department of Mathematics, University of Kentucky, Lexington, KY 40506-0027. *Systems of Quadratic Forms defined over p-adic Fields.* Preliminary report.

I will discuss some recent results about solving systems of quadratic forms defined over p-adic fields. Let $F_1, \dots, F_r \in \mathbb{Z}_p[x_1, \dots, x_s]$ be a system of r quadratic forms in s variables with coefficients in the ring of p-adic intergers $\mathbb{Z}_p$, $p \neq 2$. Suppose that the reduction modulo p of each quadratic form $a_1F_1 + \cdots + a_rF_r$ has rank at least $2r+2$, where each $a_i \in \mathbb{Z}_p$ and $(a_1, \dots, a_r) \neq (0, \dots, 0)$. Then the system $F_1, \dots, F_r$ has a simultaneous nontrivial zero in $\mathbb{Z}_p$. Possible applications and extensions of this result will be discussed. (Received January 08, 2007)