

## **Samaria Montenegro : Model theory of pseudo real closed fields.**

The notion of PAC fields has been generalized by S. Basarab and by A. Prestel to ordered fields. Prestel calls a field  $M$  pseudo real closed (PRC) if  $M$  is existentially closed (in the language of rings) in every regular extension  $L$  to which all orderings of  $M$  extend. Thus PRC fields are to real closed fields what PAC fields are to algebraically closed fields. In this talk we will present some results in the model theory of bounded PRC fields (i.e., with finitely many algebraic extensions of degree  $m$ , for each  $m > 1$ ). We fix such a field  $M$ , and add to the language of rings constant symbols for an elementary substructure;  $\text{Th}(M)$  is then model complete,  $M$  admits only finitely many orders, and these orders are definable. As conjectured by A. Chernikov, I. Kaplan and P. Simon, we show that  $\text{Th}(M)$  has NTP2, and in fact is strong of burden the number of definable orders on  $M$ . This also allows us to explicitly compute the burden of types, and to describe forking. Moreover, we show that a PRC field which has NTP2 must be bounded. [These results were independently obtained by W. Johnson for some particular PRC fields  $M$ ]. Other results of independent interest are some amalgamation results, and elimination of imaginaries for bounded PRC fields. Some of these results generalize to bounded PpC fields, using the same kind of techniques.