1042-03-89 **Julia F. Knight*** (knight.1@nd.edu). *Integer parts for real closed fields.* Preliminary report.
The *real closed ordered fields* are the models of $Th(\mathbb{R}, +, -, \cdot, 0, 1, <)$. For a real closed ordered field R, an *integer part* is a discrete ordered ring $I \subseteq R$ such that 1 is the first positive element, and for each $x \in R$, there exists $i \in I$ such that $i \leq x < i + 1$. I will describe some model theoretic results, plus some work on effectiveness. The model theoretic results, joint with Paola D'Aquino and Sergei Starchenko, say that the integer part exercises a great deal of control over the real closed field. In particular, if there is an integer part which is a nonstandard model of PA, then the real closed field is recursively saturated, with types determined by the integer part. Mourgues and Ressayre showed that any real closed ordered field has an integer part. The problem of *finding* an integer part (the complexity of an integer part, relative to the field), is interesting from the point of view of computable structure theory. Karen Lange and I are currently working on this, and I hope that by October, we will have results to report. (Received August 12, 2008)