

**Meeting:** 1003, Atlanta, Georgia, AMS CP 1, AMS Contributed Paper Session

1003-03-1550      **Lisa R. Galminas\*** (galminas@nsula.edu) and **John W. Rosenthal.** *On the Decidability of Lattices of Finite Dimensional Steinitz Exchange Systems.* Preliminary report.

In the late 1970's Chris Ash asked if the first order theory of the lattice of algebraically closed subfields of an algebraically closed field  $K$  of infinite transcendence degree is decidable. In 1990, the question was answered strongly in the negative in a paper by Magidor, Rosenthal, Rubin, and Srour. They showed that the lattice of closed subsets of any nontrivial infinite dimensional Steinitz Exchange System is at least as complex as second order number theory. In 2002, the authors showed that the first order theory of the lattice  $\mathcal{L}^{<\omega}(S)$  of finite dimensional closed subsets of any nontrivial infinite dimensional Steinitz Exchange System is at least as complex as first order number theory. In the current paper, we investigate the complexity of theories of lattices of closed subsets of nontrivial *finite* dimensional Steinitz Exchange Systems. We are primarily interested in the relationship between the complexity of such theories and the dimension of the Steinitz Exchange System, particularly when the Steinitz Exchange System is computable. (Received October 05, 2004)