1106-03-1749 **John T Baldwin*** (jbaldwin@uic.edu), John T. Baldwin, Dept of Math. Stat. and C.S M/C 249, UIC 851 S. Morgan, Chicago, IL 60607. *A basic dividing line: Are there arbitrarily large models?* Preliminary report.

An Abstract Elementary Class characterizes a cardinal κ if it has models in κ but no larger. There are a number of examples showing that a complete sentence of $L_{\omega_1,\omega}$ that characterizes a cardinal does not have good structural properties.

For example (Baldwin-Koerwien-Laskowski) There is a family of complete sentences of $L_{\omega_1,\omega}$, ϕ_n for $1 \leq n < \omega$ such that ϕ_n characterizes ϕ_n and all models in $\aleph_n$ are maximal. The class satisfies amalgamation in $\aleph_r$ for $r \leq n-2$, fails in $\aleph_{r-1}$ and trivially satisfies it in $\aleph_r$. If there is a model of ϕ_n in an uncountable cardinal there are the maximal number.

In contrast the work on atomic models makes some of the nonstructure results into a theorem.

Theorem[Baldwin-Laskowski-Shelah:Sept probability 90%] If a complete sentence of $L_{\omega_1,\omega}$ characterizes an $\aleph_\alpha$ for $\alpha > 0$ then it has $2^{\aleph_1}$ models in $\aleph_1$.

This contrasts with Boney's development of 'eventual' structure theory from large cardinal hypotheses. (Received September 15, 2014)