Proceedings of the Problem Session

Abstract   Notes are summarized from the problem session held May 19, 2005 at the workshop on Vaught's Conjecture held at the University of Notre Dame. Since the meeting there have been no known efforts which reflect ongoing progress on the problems within these notes.

Problem 1 (Young)   Suppose T is a complete theory in a fragment. It is possible to have two complete types which cannot be amalgamated. But is it possible to do this if you have only countably many types?

Answer 1 (Baldwin)   Yes. See beginning of my survey in *BSL* [1].

Problem 2 (Buechler)   Let T be superstable with less than continuum countable models, and let p be such that $U(p) = \omega$. Show that $\{p(\mathcal{M}) : \mathcal{M} \models T \text{ countable}\}$ contains countably many isomorphism types.

Remark 2 (Buechler)   I think this problem is tractable but very hard. Look at work of Newelski on multiplicity. Look at my paper with C. Hoover for an idea of how hard it will be. I think this will be one of the hard parts of VC for superstable; it will allow an induction.

Problem 3 (Baldwin)   Let σ be a sentence complete for a fragment of $\mathcal{L}_{\omega_1\omega}$ which is ω-stable (reckoned by types in the fragment). Does σ satisfy VC?

Remark 3 (Baldwin)   This is a problem I thought of a month ago because it would be nice if it were true. Essentially, this asks if we can drop the first-order assumption in the proof of VC for ω-stable theories. Where is compactness needed?