

1. *Assignment*
 - a. We'll have time in the course for discussion of a couple more topics. Suggestions?
2. *Abstracts*
 - a. At the previous meeting Ms. Afaga and I commended Jeff Doker on his organization of a recent research presentation. His abstract, posted in the hallway, was also exemplary:

TITLE: Matroid Polytopes as Minkowski Sums

ABSTRACT: Lots of familiar combinatorial objects can be described in terms of things called Matroids, and every Matroid can be represented as a polytope. It turns out that these Matroid polytopes, as well as some other related polytopes, can be decomposed into nice Minkowski sums of simplices.

- b. On the other hand, here is a perfectly *awful* abstract for an upcoming research talk in the logic colloquium at Berkeley.

TITLE: Outer Model Satisfiability

ABSTRACT: A remarkable development in Set Theory is the discovery that if large cardinals exist, then, up to a certain level of logical complexity, what is true cannot be changed by set forcing. According to a celebrated theorem of Woodin, if the Continuum Hypothesis holds and there exist unboundedly many measurable Woodin cardinals, then an existential statement in third-order arithmetic having real parameters holds in a set generic extension that preserves the CH if and only if it already holds in V . Just beyond this level of logical complexity, not only is it impossible to complete the universe in this sense, but in ZFC there is not even a first-order characterization of the family of sentences that are false in all outer models. This is a peculiar if one is accustomed to thinking of mathematics as governed by logical necessity. The theorem is that if V satisfies $ZFC^+ = ZFC +$ “every definable closed unbounded class of ordinals includes a Ramsey cardinal” and V is “sufficiently nonminimal”, then this anticharacterization phenomenon disappears. But first, what are “outer models”? Talk of outer models is inherently second-order. The least restrictive way to understand claims about outer model existence is to understand “ V ” as a countable set model in some larger ambient universe. The letter “ V ” is just intended to suggest a privileged role for this model as proxy for the real universe of sets—“real” at least in the sense that our discussion is formalizable in first-order ZFC. If V is a standard transitive model of ZFC, for the purpose of this abstract, say that W is an outer model of V if V is contained in W , the same ordinals are in W and V , and W is also a standard transitive model of ZFC. THEOREM. There exists a parameter-free formula $\text{good}(x)$ in the language of set theory as follows: Work inside a model V of ZFC^+ . Let κ be a regular uncountable cardinal. Let T in H_κ be a set of first-order axioms in the language of set theory, extending ZFC and perhaps using parameters from H_κ . (1) If H_κ satisfies $\text{good}(T)$, then there exists an outer model of V that satisfies T . (2) If H_κ does not satisfy $\text{good}(T)$ and V is sufficiently nonminimal, then T is not satisfiable in any outer model of V . The formula $\text{good}(x)$ can be taken to be parameter-free Π_2 or, if κ is greater than ω_1 , to be Π_1 in the parameter ω_1 . If “ V ” is actually V_δ , where δ is an inaccessible cardinal in some longer model of ZFC, then V is sufficiently nonminimal. Some non-first-order hypothesis, like nonminimality, is necessary.

3. *Including text*

- a. The bad example in the previous item was sent to me in an email by the colloquium organizer. I just cut-and-pasted it into the *WordPerfect* document that is the present outline. I had to do some editing to correct errors introduced by the e-mail software.
- b. Although it's longer than fair-use copyright guidelines would allow me to distribute, I can do so because it was sent me in a letter with no copyright indication. It's my property.
- c. Doker's abstract is from a poster I stole. I couldn't find its file on the Department website, so I scanned it and processed that file with *Acrobat*. It did an OCR (optical character recognition) pass, then I cut-and-pasted the text into *WordPerfect*. I had to edit out some chaff because the OCR software interpreted the box borders as characters. That whole process was *very* smooth!

4. *Presentation guidelines*

- a. Mr. Fahramand concluded discussion of Higham 1993, chapter 9—in particular, of materials that had to be displayed to discuss effectively. There's now a link to that on this course's main webpage. Use the password p&s. The examples of good and bad slides are really nice.
- b. Mr. Kifer led further discussion of this topic. When I get a copy of his report I'll post it, too.
- c. I preached a little about humor. Although an informal, light aura is vastly preferable to a formal, dull one, be *extremely* careful about inserting *planned* humor—i.e. jokes. I've learned by experience that audience members are likely to take offense at some comment when no such interpretation was intended or warranted. I've also learned that they can misunderstand a critical word or two, and their misinterpretation would be offensive even to me. Finally, I've observed perfectly reasonable speakers with similar intellectual backgrounds make extremely offensive jokes, and when I pointed that out, I realized that they had no idea at all that their jokes would be taken as insults. Don't trust your judgment on such things; just avoid the problem.