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A fragment of PFA consistent with large continuum

The side condition method of Todorčević [1] is an important technique to build proper partial orders . It has been used to establish several consequences of PFA, the most important of which are the Open Graph Axiom and the P-Ideal Dichotomy [2]. Many of these applications can be reformulated to assert that given a graph on an uncountable set, if there is a proper σ-ideal which is well behaved in a certain way with respect to this graph, then a certain partial order to add an uncountable clique to this graph is proper. On the other hand, in recent years Asperó and Mota [3] have developed new techniques to iterate proper partial orders which have allowed them to establish the consistency of several consequences of PFA with the continuum being arbitrarily large. In my talk I shall talk about how using the methods of Asperó and Mota, one can get models where the continuum is arbitrarily large, Martin's Axiom holds, and a certain 'side condition forcing axiom' holds for graphs on ω_1 and ω_1-generated σ-ideals. For example, such models have no S-spaces, $\omega_1 \to (\omega_1, \alpha)^2$ holds for any countable ordinal α [4], and certain restricted forms of OGA and PID hold.

[1] Todorčević, S., A note on the Proper Forcing Axiom. Contemporary Mathematics 95 (1984), 209-218.

[2] Todorčević, S., Notes on forcing axioms. World Scientific, 2013.

[3] Asperó, D., Mota, M. A., Measuring club-sequences together with the continuum large.

[4] Todorčević, S., Forcing positive partition relations. Transactions of the American Mathematical Society (1983): 703-720.