

Hierarchical Superposition Revisited (Abstract)

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In 1994, Bachmair, Ganzinger, and Waldmann introduced the hierarchical superposition calculus as a generalization of the superposition calculus for black-box style theory reasoning. Their calculus works in a framework of hierarchic specifications. It tries to prove the unsatisfiability of a set of clauses with respect to interpretations that extend a background model such as the integers with linear arithmetic conservatively, that is, without identifying distinct elements of old sorts (“confusion”) and without adding new elements to old sorts (“junk”). We show how the calculus can be improved, report on practical experiments, and present a new completeness result for non-compact classes of background models (i. e., linear integer or rational arithmetic restricted to standard models).

This is joint work with Peter Baumgartner, NICTA and Australian National University, Canberra, Australia.