1035-91-1482 **Andrei Lapets** and **Alex Levin*** (`alex.levin@post.harvard.edu`). *Restricted Truthful Combinatorial Auction Mechanisms.*

In a foundational paper, Ahuva Mu'alem and Noam Nisan provided some basic truthful approximation mechanisms for combinatorial auctions, and demonstrated ways of combining them such that the resulting mechanism remained truthful.

In this work, we study some of Mu'alem and Nisan's mechanisms from a programming languages perspective. Our goal is to automate proofs of truthfulness, and to this end, we are able to create a type system that permits such automation for an (admittedly restricted) class of mechanisms. In addition, we generalize the notion of taking a "maximum" of mechanisms, and show that several mechanisms that Mu'alem and Nisan present are essentially "maxima" over simple building blocks. Because of properties of the "maximum" operator, in order to prove the truthfulness of the overall mechanisms, it suffices to prove some results about the building blocks—and automating such proofs is within reach. (Received September 20, 2007)