Meeting: 1003, Atlanta, Georgia, SS 6A, AMS-ASL Special Session on Reverse Mathematics, I

1003-03-823 **Alberto Marcone*** (`marcone@dimi.uniud.it`), Dipartimento di Matematica e Informatica, Univ. di Udine, viale delle Scienze 206, 33100 Udine, Italy. *Finite better quasi orders.*

Let BQO(n) be the following statement: the partial order consisting of n mutually incomparable elements is a better quasi order. For every n, ATR_0 proves BQO(n). BQO(2) is provable in RCA_0. For $n \geq 3$ the proof-theoretic strength of BQO(n) is unknown, and may lie anywhere between RCA_0 and ATR_0. However the answer to this question does not depend on n:

Theorem. Let T be a subsystem of second order arithmetic containing RCA_0 and suppose that T proves BQO(3). Then for any $n > 0$, BQO(n) is a theorem of T.

If BQO(3) is equivalent to ATR_0 than some basic statements about bqos (e.g. the closure of bqos under cartesian products) will also be equivalent to ATR_0. Such a result would establish beyond any doubt that very little bqo theory can be carried out in systems properly weaker than ATR_0. (Received September 30, 2004)