

# The Reverse Mathematics of the Veblen function

Alberto Marcone

Università di Udine, Udine, Italy  
alberto.marcone@dimi.uniud.it

Veblen functions on ordinals are a basic tool in proof-theory: they provide an ordinal notation system up to  $\Gamma_0$ . Here we look at them from the viewpoint of computability theory and reverse mathematics. If  $F$  is a Veblen function on ordinals we can extend in a natural way  $F$  to an operation on linear orders. In reverse mathematics, we ask: “how hard is it to prove that if the linear order  $X$  is a well-order then  $F(X)$  is also a well-order?”. In computability theory, the question is: “if we have a descending chain in  $F(X)$ , how hard is it to compute a descending chain in  $X$ ?”.

*Joint work with Antonio Montalban.*