

- RADEK HONZIK, *A definable well-ordering with compactness principles*.
Charles University, Department of Logic, Celetná 20, Praha 1, 116 42, Czech Republic,
web page: logika.ff.cuni.cz/radek.
E-mail: radek.honzik@ff.cuni.cz.

We will show from the optimal large cardinal assumption that the tree property at ω_2 , and other compactness principles, are compatible with a Σ_3^1 well-ordering of the reals. We will also discuss the connection of this result to MA, BPFA and PFA and in general to the question of manipulating cardinal invariants at ω with the tree property at ω_2 . At the end we will discuss methods and open problems regarding the generalization of this result to the tree property at ω_3 with a $H(\omega_2)$ -definable well-ordering of $H(\omega_2)$, or in general with regard to obtaining a desired pattern of generalized cardinal invariants with the tree property.