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Cody Robert Dance* (cody.dance@unt.edu). *The External Ultrapower of HOD via W_1^1 .*

Assuming $AD + V = L(\mathbb{R})$, the study of the structure of HOD is one of the main themes in modern set theory. In particular, little is known about the large cardinal structure of HOD and how it interacts with the structural theory of $L(\mathbb{R})$. In studying the large cardinal structure of HOD, it is natural to consider the external ultrapower of HOD (which uses all functions in $L(\mathbb{R})$) via a measure μ , where μ is some measure in $L(\mathbb{R})$. Besides Woodin's proof that δ_1^2 is strong to Θ in HOD, external ultrapowers are not well understood. Let W_1^1 be the unique normal measure on ω_1 . In this talk we compute the external ultrapower of HOD via W_1^1 and we analyze the associated embedding. In particular, we answer a question of Woodin and show that the canonical embedding is an iteration of HOD (at least for some large initial segment). Time allowing, we will use our analysis to answer the following question of Jackson Ketchersid "For which $\alpha < \omega_\omega$ is there an $f : \omega_1^n \rightarrow \omega_1$ such that $f \in HOD$ and $[f]_{W_n^1} = \alpha$?" (Received February 15, 2016)