

# Refinable Functions: The Exceptional Case

Ruth Lee and Paul Weber

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## Abstract

A refinable function is a function  $f(x)$  such that  $f(x) = \sum_{\ell} c_{\ell} f(2x - \ell)$ . In this talk we plan to explore "exceptional" refinable functions, functions which are refinable such that  $c_a \neq 0, c_{\ell} = 0 \forall \ell \neq a$ . We will proceed to present methods for constructing 2-finitely refinable exceptional functions over the real line. We aim to elucidate some of the work done by previous REU student Nathanael Berglund in "Methods for the Construction of Certain Finitely Refinable Functions" as well as provide an access point to students unfamiliar with the concept of refinability.