1103-05-76 **Lara Pudwell** and **Eric Rowland*** (rowland@lacim.ca). *Avoiding fractional powers over the natural numbers.*

Beginning with work of Thue, researchers have been interested in the avoidability of repetitions in long words over a finite alphabet. A recent variant has been to consider an infinite alphabet instead, for example the alphabet $\mathbb{Z}_{\geq 0}$. Since most patterns are avoidable over $\mathbb{Z}_{\geq 0}$, one question of interest is characterizing the lexicographically least infinite word avoiding a given pattern. For natural numbers $a \geq 2$, Guay-Paquet and Shallit established the structure of the lexicographically least words avoiding a-powers and avoiding overlaps. Here we systematically study the lexicographically least word avoiding $\frac{a}{b}$-powers for rational numbers $\frac{a}{b} > 1$. In many cases these words are fixed points of uniform morphisms on $\mathbb{Z}_{\geq 0}^*$. (Received August 12, 2014)