

1086-05-2762

**Evan M. O’Dorney\*** (odorney@college.harvard.edu). *Degree asymptotics of the numerical semigroup tree.*

A *numerical semigroup* is a subset  $\Lambda$  of the nonnegative integers that is closed under addition, contains 0, and omits finitely many nonnegative integers (called the *gaps* of  $\Lambda$ ). The collection of all numerical semigroups may be visually represented by a tree of element removals, in which the children of a semigroup  $\Lambda$  are formed by removing one element of  $\Lambda$  that exceeds all existing gaps of  $\Lambda$ . In general, a semigroup may have many children or none at all, making it difficult to understand the number of semigroups at a given depth on the tree. We investigate the problem of estimating the number of semigroups at depth  $g$  with  $h$  children, showing that as  $g$  becomes large, it tends to a proportion  $\varphi^{-h-2}$  of all numerical semigroups, where  $\varphi$  is the golden ratio. (Received September 25, 2012)