1106-05-545 **Luis David Garcia-Puente*** (lgarcia@shsu.edu), **Elizabeth Herman** (eaherman43@marianuniversity.edu), **Amadeus Martin** (amadeus06@gmail.com) and **Bryan Oakley** (boa1540@uga.edu). *Accessibility numbers in the sandpile monoid of a directed graph.* Preliminary report.

Let $\Gamma = (V, E)$ be a directed graph with a global sink s. A sandpile c is a vector of non-negative integers indexed by $V \setminus s$. Given a sandpile c, if $c(v) < \text{outdeg}(v)$, for all non-sink vertices v then c is stable; otherwise, c is unstable. In the latter case, c may be stabilized by a sequence of vertex topplings where an unstable vertex v topples sending a grain of sand through each of its out-edges. A stable sandpile c is accessible from a sandpile b if one can reach c from b by a series of sand additions and topplings. The accessibility number of a stable sandpile c is the number of stable sandpiles that access c. This leads to the *accessibility polynomial* of Γ

$$\mathcal{A}(x) = \sum_{i=1}^{m} a_i x^i,$$

where m is the number of stable sandpiles in Γ and a_i is the number of stable sandpiles with accessibility number i. The coefficient a_m is thus the number of sandpiles that are accessible by all other stable sandpiles. In this talk we introduce the accessibility polynomial and discuss some of its properties. For example, a_m equals the number of spanning trees of Γ directed to s. (Received September 02, 2014)