1123-05-159 **Luis David Garcia Puente*** (lgarcia@shsu.edu), **Elizabeth Herman**, **Amadeus Martin** and **Bryan Oakley**. *Accessibility numbers in abelian sandpile model on a directed graph.* Preliminary report.

Let G be a digraph with a global sink s. A sandpile is a vector of non-negative integers indexed by the non-sink vertices of G. Given a sandpile c, if c(v) $<$ outdeg(v) for each vertex v, then c is stable; otherwise, c is unstable. In the latter case, the sandpile c may be stabilized by a sequence of vertex topplings where an unstable vertex topples sending one grain of sand through each of its outgoing edges. The set of stable sandpiles is known as the sandpile monoid of G.

A 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. The largest accessibility number equals the order of the sandpile monoid. Sandpiles with this accessibility number are called recurrent and play a fundamental role in understanding the dynamics of the sandpile model. If a sandpile is not recurrent, it is called transient. In this talk we discuss some properties of the accessibility numbers in the sandpile monoid of a digraph. We will focus on the second largest accessibility number. It can be checked that this number is at most the number of transient sandpiles. We present a characterization of the graphs for which this bound is achieved. (Received August 24, 2016)