

1135-M5-1923 **Bruce F. Torrence*** (btorrenc@rmc.edu), Ashland, VA. *Fibonacci and the Stochastic Abacus*.

In the early 1970s Arthur Engel developed what he later called the “stochastic abacus” to allow fourth graders to calculate probabilities of absorbing states in a Markov chain with rational transition probabilities, simply by moving chips along the edges of a directed graph. His method, widely studied since the mid-1980s, is sometimes called a “chip-firing” algorithm, or an “abelian sandpile” method. Using techniques of elementary discrete mathematics, we will explore how Engel’s algorithm can be artfully employed to study a variety of “pass the buck” games, where the players’ winning probabilities are known to be closely connected to the Fibonacci and Lucas numbers. We will also demonstrate an interactive *Mathematica* interface, allowing students to explore and make discoveries with the stochastic abacus. (Received September 25, 2017)