1105-11-127 **Minerva Catral**, **Pari Ford** and **Pamela E Harris*** (pamela.harris@usma.edu), United States Military Academy, Department of Mathematical Sciences, 646 Swift Road, West Point, NY 10996, and **Steven J Miller** and **Dawn Nelson**. *Generalizing Zeckendorf's Theorem: The Kentucky Sequence.*

Zeckendorf's theorem states that every positive integer can be uniquely decomposed as a sum of non-consecutive Fibonacci numbers. We generalize the Zeckendorf condition to generate (s, b)-Generacci sequences which give unique decompositions of positive integers as a sum of (s, b)-Generacci numbers. In fact the $(1, 1)$-Generacci sequence is the Fibonacci sequence. In this talk we focus on the $(1, 2)$-Generacci sequence, which we call the Kentucky sequence. Previous methods to determine the behavior of the number of summands for integers in a given interval do not apply to such a sequence (whose recurrence relation has zero leading coefficient) yet we can prove that this sequence displays Gaussian behavior. As a consequence of our proof we rederive many properties of the Fibonacci polynomials. Furthermore, we show that the distribution of gaps between summands in the $(1, 2)$-Generacci decomposition converges to exponential decay. (Received September 14, 2014)