1093-11-146 **Philippe Demontigny*** (ppd1@williams.edu), 5 Litton Road, Flemington, NJ 08822, and **Thao T Do**. *A Generalization of Fibonacci Far-Difference Representations and Gaussian Behavior.*

A natural generalization of base B expansions is Zeckendorf's Theorem, which states that every integer can be uniquely written as a sum of non-consecutive Fibonacci numbers $\{F_n\}$, with $F_1 = 1, F_2 = 2$. If instead we allow the coefficients in the decomposition to be zero or ± 1, the resulting expression is known as the far-difference representation. Alpert proved that a far-difference representation exists and is unique under certain restraints, specifically that two adjacent summands of the same sign must be at least 4 indices apart and those of opposite signs must be at least 3 indices apart.

We prove that a far-difference representation can be created using sets of Skipponacci numbers, which are generated by recurrence relations of the form $S_{n+1} = S_n + S_{n-k}$ for $k \geq 0$. Now every integer can be written uniquely as a sum of the $\pm S_n$'s such that every two terms of the same sign differ in index by at least $2k+2$, and every two terms of opposite signs differ in index by at least $k+2$. Additionally, we prove that the number of positive and negative terms converges to a Gaussian. The proof uses recursion to obtain the generating function for having a fixed number of summands, which we prove converges to the generating function of the Gaussian. (Received August 09, 2013)