1096-VO-1903 **Philippe Demontigny*** (ppd1@williams.edu), 5 Litton Road, Flemington, NJ 08822, and **Thao T Do** and **Steven J. Miller**. *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. If we allow the coefficients in the decomposition to be zero or ± 1, the resulting expression is called a far-difference representation. Alpert proved that a Fibonacci far-difference representation exists and is unique when two adjacent summands of the same sign are at least 4 indices apart and those of opposite signs are at least 3 indices apart.

We prove that a far-difference representation can be created using sets of k-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 $\pm S_n$'s such that every two terms of the same sign are at least $2k+2$ indices apart, and every two terms of opposite signs are at least $k+2$ indices apart. Additionally, we prove that the number of positive and negative terms in given k-Skipponacci decompositions converges to a Gaussian. We conclude by proving that for any choice of k, the probability of finding a gap of length $j \geq 2k+2$ decays geometrically, with decay ratio equal to the largest root of the given k-Skipponacci recurrence. (Received September 16, 2013)