Abstract
Kimberling defines the function $\kappa(n) = \lfloor n^2\alpha \rfloor - n\lfloor n\alpha \rfloor$, and presents conjectures and open problems. We present three main theorems. The theorems provide quick, effectively computable, lower bounds on $\kappa(n)$ which are useful in proving that certain values do not lie in the range of $\kappa$. Our main contribution is describing the behavior of $\kappa(n)$ within an almost negligible error using the differences of the indices in the Zeckendorf representation of $n$. We list 4 open problems connected with $\kappa$. 