On the Convergence of Leslie Matrix by Using Scrambling Index

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The scrambling index of an $n \times n$ primitive matrix A is the smallest positive integer k such that $A^k(A^t)^k = J$, where A^t denotes the transpose of A and J denotes the $n \times n$ all ones matrix. For a primitive stochastic matrix S, the rate of convergence of the sequence of powers is determined by the upper bounds on the second largest modulus of an eigenvalue of S. In this paper, we give an estimate on the coefficients of ergodicity of S by using the smallest nonzero entry in S. We will also find the scrambling index of Leslie matrix, and by using scrambling index, we will further discuss the convergence of the population to the stable age distribution.