

## MATHEMATICS MAGAZINE PROBLEM

SCOTT N. ARMSTRONG AND CHRISTOPHER J. HILLAR

ABSTRACT. Proposed by *Scott N. Armstrong and Christopher J. Hillar*. Let  $\lambda_1, \dots, \lambda_k$  be nonnegative real numbers summing to 1 and let  $a_1, \dots, a_k \in \mathbb{C}$ . For  $n > k$ , define  $a_n = \lambda_1 a_{n-1} + \dots + \lambda_k a_{n-k}$ . If there exist two consecutive  $\lambda_i, \lambda_{i+1}$  that are both nonzero, prove that  $\lim_{n \rightarrow \infty} a_n$  exists and determine its value.

DEPARTMENT OF MATHEMATICS, UNIVERSITY OF CALIFORNIA, BERKELEY, CA 94720  
*E-mail address:* `sarm@math.berkeley.edu`

DEPARTMENT OF MATHEMATICS, TEXAS A&M UNIVERSITY, COLLEGE STATION, TX 77843.  
*E-mail address:* `chillar@math.tamu.edu`