CHARACTERIZATION OF P-PROPERTY FOR SOME Z-TRANSFORMATIONS ON POSITIVE SEMIDEFINITE CONE

R. BALAJI†

Abstract. The P-property of the following two Z-transformations with respect to the positive semidefinite cone is characterized:

(i) \( I - S \), where \( S : \mathbb{S}^{n \times n} \to \mathbb{S}^{n \times n} \) is a nilpotent linear transformation,

(ii) \( I - L_A^{-1} \), where \( L_A \) is the Lyapunov transformation defined on \( \mathbb{S}^{n \times n} \) by \( L_A(X) = AX + XA^T \).

(Here \( \mathbb{S}^{n \times n} \) denotes the space of all symmetric \( n \times n \) matrices and \( I \) is the identity transformation.)

Key words. P-property, Stein-type transformations, Lyapunov transformations.

AMS subject classifications. 90C33, 17C55.

*Received by the editors on April 29, 2011. Accepted for publication on October 4, 2011. Handling Editor: Michael Tsatsomeros.
†Department of Mathematics, Indian Institute of Technology-Madras, Chennai-36, India (balaji5@iitm.ac.in).