



**CONTINUED FRACTION EXPANSIONS OF  
SOME FUNCTIONS OF POSITIVE  
DEFINITE MATRICES**

Ali Kacha and Brahim Ounir

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**Abstract**

In this paper, we recall some results of matrix functions with real coefficients. The aim of this paper is to provide some properties and results of continued fractions with matrix arguments. Then we give continued fractions expansions of some inverse of hyperbolic and circular functions  $\arcsin(A)$ ,  $\operatorname{arcsh}(A)$ ,  $\arccos A$  and  $\operatorname{arcch}(A)$ , where  $A$  is a positive definite matrix.

**Keywords and phrases:** continued fraction expansion, positive definite matrix, function of matrices.