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THE SIGN ALGORITHM FOR SOLVING  
COUPLED ALGEBRAIC MATRIX RICCATI EQUATIONS

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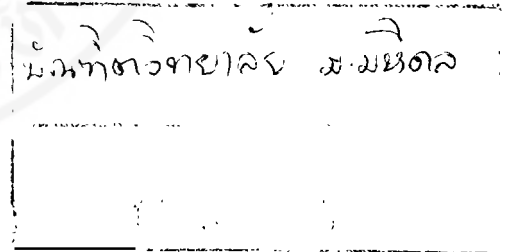
JARERNSRI LIMSUPAVANICH

A THESIS SUBMITTED IN PARTIAL FULFILMENT OF  
THE REQUIREMENTS FOR THE DEGREE OF  
MASTER OF SCIENCE  
(APPLIED MATHEMATICS)

IN THE  
FACULTY OF GRADUATE STUDIES

OF  
MAHIDOL UNIVERSITY

1983



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## ABSTRACT

The Riccati equation is one of the famous differential equation which have an application in so many fields.

In this thesis one special class of Riccati equation known as the coupled algebraic matrix Riccati equations will be studied. This type of equation occurs in the problem of optimal control in solving a linear stochastic system of quadratic performance criteria. In general, this special equation cannot be solved analytically, then, numerical methods are employed. The present work applies the technique called the sign algorithm to solve the concerned problem. The sign algorithm is then implemented as a computer program package, dubbed as SACARE (Sign Algorithm for solving Coupled Algebraic matrix Riccati Equations).

The SACARE package is written in FORTRAN77 language with total 600 instructions and can be used to solve the problem of maximum 10-state system of the coupled algebraic matrix Riccati equations in both on-line interactive mode and batch processing mode.