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**RESOLUTION OF RICCATI EQUATION BY THE METHOD
DECOMPOSITIONAL OF ADOMIAN**

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ABSTRACT

In this work, we will use the method of decompositional for Adomian solve the Riccati equation in the form:

$$u' = a(t) + b(t)u + c(t)u^2 \quad (1)$$

Keywords:

Adomian decomposition method, Adomian's polynomials, Riccati equation, Development limited.

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1. INTRODUCTION

The Riccati equation it is named in honor of Jacopo Francesco Riccati (1676-1754) and his son Vincenzo Riccati (1707-1775).

In general equation (1) is not solvable by quadratures, if he knows a particular solution u_p , the Riccati equation (1) reduces to a Bernoulli equation.

And in the 80 G. Adomian proposed a new method to solve differential equations of different types.

This method is to look for the solution in the form of a series, and decompose the non-linear operator in a series of function (polynomials Adomian) [4, 5]

K .Abbaoui and Y.Cherrault, place assumptions on the convergence of series of Adomian to the exact solution [1, 2, 3, 6].

This work mainly concerns the resolution of the Riccati equation by the Adomian method, with application examples.

2. ADOMIAN METHOD

We consider the following problem:

$$Fu = Lu + Ru + Nu = f(t) \quad (2)$$