

Two solutions to the Bateman-Burgers equation

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Abstract

In this paper, I describe two solutions to the Bateman-Burgers equation.
The paper ends with "The End"

Introduction

The Bateman-Burgers equation^[1] is

$$\frac{\partial u(x, t)}{\partial t} + u(x, t) \frac{\partial u(x, t)}{\partial x} = \nu \frac{\partial^2 u(x, t)}{\partial t^2}$$

where ν is a known parameter.

In this paper, I describe two solutions to the Bateman-Burgers equation.

The constant solution to the Bateman-Burgers equation

The constant solution to the Bateman-Burgers equation is

$$u(x, t) = \frac{b}{a} (1 + \nu b) + c$$

where a, b, c are constants of integration

The second solution to the Bateman-Burgers equation

The second solution to the Bateman-Burgers equation is

$$u(x, t) = \frac{b}{a} (1 + 2\nu b \tanh(c - ax + bt))$$

where a, b, c are constants of integration

References

[1] https://en.wikipedia.org/wiki/Burgers%27_equation

The End